Corrections: pages

16, 37,

June 1894

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FIVE-PLACE

LOGARITHMIC AND TRIGONOMETRIC TABLES.

ARRANGED BY

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THE first six of these tables follow, in the main,
Gauss's Tables; and the last nine, except the
twelfth, the tables of the American Practical Naviga-
tor as revised by Commander Cooper of the United
States Navy, under the direction of the Bureau of
Navigation.

INTRODUCTION.

——○o;○;○o——

1. If the natural numbers are regarded as powers of ten, the exponents of the powers are the Common or Briggs Logarithms of the numbers. If A and B denote natural numbers, a and b their logarithms, then $10^a = A$, $10^b = B$; or, written in logarithmic form,

$$\log A = a, \qquad \log B = b.$$

2. The logarithm of a product is found by adding the logarithms of its factors.

For, $\qquad A \times B = 10^a \times 10^b = 10^{a+b}.$

Therefore, $\qquad \log (A \times B) = a + b = \log A + \log B.$

3. The logarithm of a quotient is found by subtracting the logarithm of the divisor from that of the dividend.

For, $\qquad \dfrac{A}{B} = \dfrac{10^a}{10^b} = 10^{a-b}.$

Therefore, $\qquad \log \dfrac{A}{B} = a - b = \log A - \log B.$

4. The logarithm of a power of a number is found by multiplying the logarithm of the number by the exponent of the power.

For, $\qquad A^n = (10^a)^n = 10^{an}.$

Therefore, $\qquad \log A^n = an = n \log A.$

5. The logarithm of the root of a number is found by dividing the logarithm of the number by the index of the root.

For, $\qquad \sqrt[n]{A} = \sqrt[n]{10^a} = 10^{\frac{a}{n}}.$

Therefore, $\qquad \log \sqrt[n]{A} = \dfrac{a}{n} = \dfrac{\log A}{n}.$

6. The logarithms of 1, 10, 100, etc., and of 0.1, 0.01, 0.001, etc., are integral numbers. The logarithms of all other numbers are fractions.

For, $10^0 =$ 1, hence $\log 1 = 0$; $10^{-1} =$ 0.1, hence $\log 0.1 = -1$;
      $10^1 =$ 10, hence $\log 10 = 1$; $10^{-2} =$ 0.01, hence $\log 0.01 = -2$;
      $10^2 =$ 100, hence $\log 100 = 2$; $10^{-3} = 0.001$, hence $\log 0.001 = -3$;
      $10^3 = 1000$, hence $\log 1000 = 3$;   and so on.

If the number is between   1 and   10, the logarithm is between   0 and   1.
If the number is between   10 and   100, the logarithm is between   1 and   2.
If the number is between   100 and   1000, the logarithm is between   2 and   3.
If the number is between   1 and   0.1, the logarithm is between   0 and   −1.
If the number is between   0.1 and   0.01, the logarithm is between   −1 and   −2.
If the number is between 0.01 and   0.001, the logarithm is between   −2 and   −3.
And so on.

7. If the number is less than 1, the logarithm is negative (§ 6), but is written in such a form that the *fractional part* is always *positive*.

For the number may be regarded as the product of two factors, one of which lies between 1 and 10, and the other is a negative power of 10; the logarithm will then take the form of a *difference* whose minuend is a positive proper fraction, and whose subtrahend is a positive integral number.

Thus, $0.48 = 4.8 \times 0.1$.
Therefore (§ 2), log $0.48 = \log 4.8 + \log 0.1 = 0.68124 - 1$.   (Page 1.)
Again, $0.0007 = 7 \times 0.0001$.
Therefore, $\log 0.0007 = \log 7 + \log 0.0001 = 0.84510 - 4$.

8. Every logarithm, therefore, consists of two parts : a positive or negative integral number, which is called the **Characteristic**, and a *positive* proper fraction, which is called the **Mantissa**.

Thus, in the logarithm 3.52179, the integral number 3 is the characteristic, and the fraction .52179 the mantissa.   In the logarithm $0.78254 - 2$, the integral number − 2 is the characteristic, and the fraction .78254 is the mantissa.

9. If the logarithm is negative, it is customary to change the form of the difference so that the subtrahend shall be 10 or a multiple of 10. This is done by adding to both minuend and subtrahend a number which will increase the subtrahend to 10 or a multiple of 10.

Thus, the logarithm $0.78254 - 2$ is changed to $8.78254 - 10$ by adding 8 to both minuend and subtrahend.   The logarithm $0.92737 - 13$ is changed to $7.92737 - 20$ by adding 7 to both minuend and subtrahend.

10. The following rules are derived from § 6 : —

If the number is *greater than* 1, make the characteristic of the logarithm *one unit less* than the number of figures on the left of the decimal point.

If the number is *less than* 1, make the characteristic of the logarithm *negative*, and *one unit more* than the number of zeros between the decimal point and the first significant figure of the given number.

If the characteristic of a given logarithm is *positive*, make the number of figures in the integral part of the corresponding number *one more* than the number of units in the characteristic.

If the characteristic is *negative*, make the number of zeros between the decimal point and the first significant figure of the corresponding number *one less* than the number of units in the characteristic.

Thus, the characteristic of log 7849.27 = 3;
  the characteristic of log 0.037 = — 2 = 8.00000 — 10.

If the characteristic is 4, the corresponding number has five figures in its integral part. If the characteristic is — 3, that is, 7.00000 — 10, the corresponding fraction has two zeros between the decimal point and the first significant figure.

11. The logarithms of numbers that can be derived from one another by multiplication or division by an integral power of 10 have the same mantissa.

For, multiplying or dividing a number by an integral power of 10 will increase or diminish its logarithm by the exponent of that power of 10; and since this exponent is an integer, the mantissa of the logarithm will be unaffected.

Thus, log 4.6021 = 0.66296. (Page 9.)

  log 460.21 = log (4.6021 × 10^2) = log 4.6021 + log 10^2
     = 0.66296 + 2 = 2.66296.

  log 460210 = log (4.6021 × 10^5) = log 4.6021 + log 10^5
     = 0.66296 + 5 = 5.66296.

  log 0.046021 = log (4.6021 ÷ 10^2) = log 4.6021 — log 10^2
     = 0.66296 — 2 = 8.66296 — 10.

TABLE I.

12. In this table (pp. 1–19) the vertical columns headed N contain the numbers, and the other columns the logarithms. On page 1 both the characteristic and the mantissa are printed. On pages 2–19 the mantissa only is printed.

The fractional part of a logarithm can be expressed only approximately, and in a five-place table all figures that follow the fifth are rejected. Whenever the sixth figure is 5, or more, the fifth figure is increased by 1. The figure 5 is written when the value of the figure in the place in which it stands, together with the succeeding figures, is more than 4½, but less than 5.

Thus, if the mantissa of a logarithm written to seven places is 5328732, it is written in this table (a five-place table) 53287. If it is 5328751, it is written 53288. If it is 5328461 or 5328499, it is written in this table 53285.

Again, if the mantissa is 5324981, it is written 53250; and if it is 4999967, it is written 50000.

This distinction between 5 and $\underline{5}$, in case it is desired to curtail still further the mantissas of logarithms, removes all doubt whether a 5 in the last given place, or in the last but one followed by a zero, should be simply rejected, or whether the rejection should lead us to increase the preceding figure by one unit.

Thus, the mantissa 13925 when reduced to four places should be 1392; but 13925 should be 1393.

To Find the Logarithm of a Given Number.

13. If the given number consists of one or two significant figures, the logarithm is given on page 1. If zeros follow the significant figures, or if the number is a proper decimal fraction, the character- istic must be determined by § 10.

14. If the given number has three significant figures, it will be found in the column headed N (pp. 2–19), and the mantissa of its logarithm in the next column to the right, and on the same line. Thus,

> Page 2.   log 145 = 2.16137,   log 14500 = 4.16137.
> Page 14. log 716 = 2.85491,   log 0.716 = 9.85491 − 10.

15. If the given number has four significant figures, the first three will be found in the column headed N, and the fourth at the top of the page in the line containing the figures **1, 2, 3,** etc. The mantissa will be found in the column headed by the fourth figure, and on the same line with the first three figures. Thus,

> Page 15. log 7682 = 3.88547,   log 76.85 = 1.88564.
> Page 18. log 93280 = 4.96979,   log 0.9468 = 9.97626 − 10.

16. If the given number has five or more significant figures, a process called **interpolation** is required.

Interpolation is based on the *assumption* that between two con- secutive mantissas of the table the change in the mantissa is directly proportional to the change in the number.

Required the logarithm of 34237.

The required mantissa is (§ 11) the same as the mantissa for 3423.7; there- fore it will be found by adding to the mantissa of 3423 seven-tenths of the difference between the mantissas for 3423 and 3424.

The mantissa for 3423 is 53441.

The difference between the mantissas for 3423 and 3424 is 12.

Hence, the mantissa for 3423.7 is 53441 + (0.7 × 12) = 53449.

Therefore, the required logarithm of 34237 is 4.53449.

Required the logarithm of 0.0015764.

The required mantissa is the same as the mantissa for 1576.4; therefore it will be found by adding to the mantissa for 1576 four-tenths of the difference between the mantissas for 1576 and 1577.

The mantissa for 1576 is 19756.

The difference between the mantissas for 1576 and 1577 is 27.

Hence, the mantissa for 1576.4 is 19756 + (0.4 × 27) = 19767.

Therefore, the required logarithm of 0.0015764 is 7.19767 − 10.

Required the logarithm of 32.6708.

The required mantissa is the same as the mantissa for 3267.08; therefore it will be found by adding to the mantissa for 3267 eight-hundredths of the difference between the mantissas for 3267 and 3268.

The mantissa for 3267 is 51415.

The difference between the mantissas for 3267 and 3268 is 13.

Hence, the mantissa for 3267.08 is 51415 + (0.08 × 13) = 51416.

Therefore, the required logarithm of 32.6708 is 1.51416.

17. When the fraction of a unit in the part to be added to the mantissa for four figures is less than 0.5 it is to be neglected; when it is 0.5 or more than 0.5 it is to be taken as one unit.

Thus, in the first example, the part to be added to the mantissa for 3423 is 8.4, and the .4 is rejected. In the second example, the part to be added to the mantissa for 1576 is 10.8, and 11 is added.

To FIND THE NUMBER CORRESPONDING TO A GIVEN LOGARITHM.

18. If the given mantissa can be found in the table, the first three figures of the required number will be found in the same line with the mantissa in the column headed N, and the fourth figure at the top of the column containing the mantissa.

The position of the decimal point is determined by the characteristic (§ 10).

Find the number corresponding to the logarithm 0.92002.

Page 16. The number for the mantissa 92002 is 8318.
Therefore, the required number is 8.318.

Find the number corresponding to the logarithm 6.09167.

Page 2. The number for the mantissa 09167 is 1235.
Therefore, the required number is 1235000.

Find the number corresponding to the logarithm 7.50325 − 10.

Page 6. The number for the mantissa 50325 is 3186.
Therefore, the required number is 0.003186.

19. If the given mantissa cannot be found in the table, find in the table the two adjacent mantissas between which the given mantissa lies, and the four figures corresponding to the smaller of these two mantissas will be the first four significant figures of the required number. If more than four figures are desired, they may be found by interpolation, as in the following examples:

Find the number corresponding to the logarithm 1.48762.

Here the two adjacent mantissas of the table, between which the given mantissa 48762 lies, are found to be (page 6) 48756 and 48770. The corresponding numbers are 3073 and 3074. The smaller of these, 3073, contains the first four significant figures of the required number.

The difference between the two adjacent mantissas is 14, and the difference between the corresponding numbers is 1.

The difference between the smaller of the two adjacent mantissas, 48756, and the given mantissa, 48762, is 6. Therefore, the number to be annexed to 3073 is $\frac{6}{14}$ of $1 = 0.428$, and the fifth significant figure of the required number is 4.

Hence, the required number is 30.734.

Find the number corresponding to the logarithm 7.82326 — 10.

The two adjacent mantissas between which 82326 lies are (page 13) 82321 and 82328. The number corresponding to the mantissa 82321 is 6656.

The difference between the two adjacent mantissas is 7, and the difference between the corresponding numbers is 1.

The difference between the smaller mantissa, 82321, and the given mantissa, 82326, is 5. Therefore, the number to be annexed to 6656 is $\frac{5}{7}$ of $1 = 0.7$, and the fifth significant figure of the required number is 7.

Hence, the required number is 0.0066567.

In using a five-place table the numbers corresponding to mantissas may be carried to five significant figures, and in the first part of the table to six figures.*

20. The logarithm of the reciprocal of a number is called the **Cologarithm** of the number.

If A denote any number, then

$$\operatorname{colog} A = \log \frac{1}{A} = \log 1 - \log A \ (\S\ 3) = -\log A.$$

Hence, the cologarithm of a number is equal to the logarithm of the number with the minus sign prefixed, which sign affects the entire logarithm, both characteristic and mantissa.

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* In most tables of logarithms proportional parts are given as an aid to interpolation; but, after a little practice, the operation can be performed nearly as rapidly without them. Their omission allows a page with larger-faced type and more open spacing, and consequently less trying to the eyes.

In order to avoid a negative mantissa in the cologarithm, it is customary to substitute for $-\log A$ its equivalent

$$(10 - \log A) - 10.$$

Hence, the cologarithm of a number is found by subtracting the logarithm of the number from 10, and then annexing -10 to the remainder.

The best way to perform the subtraction is to begin on the left and subtract each figure of $\log A$ from 9 until we reach the last significant figure, which must be subtracted from 10.

If $\log A$ is greater in absolute value than 10 and less than 20, then in order to avoid a negative mantissa, it is necessary to write $-\log A$ in the form

$$(20 - \log A) - 20.$$

So that, in this case, $\text{colog } A$ is found by subtracting $\log A$ from 20, and then annexing -20 to the remainder.

Find the cologarithm of 4007.

$$\begin{array}{rr} & 10 \qquad -10 \\ \text{Page 8.} \qquad \log 4007 = & 3.60282 \\ \hline \text{colog } 4007 = & 6.39718 - 10 \end{array}$$

Find the cologarithm of 103992000000.

$$\begin{array}{rr} & 20 \qquad -20 \\ \text{Page 2.} \quad \log 103992000000 = & 11.01700 \\ \hline \text{colog } 103992000000 = & 8.98300 - 20 \end{array}$$

If the characteristic of $\log A$ is negative, then the subtrahend, -10 or -20, will vanish in finding the value of $\text{colog } A$.

Find the cologarithm of 0.004007.

$$\begin{array}{rr} & 10 \qquad -10 \\ \log 0.004007 = & 7.60282 - 10 \\ \hline \text{colog } 0.004007 = & 2.39718 \end{array}$$

With practice, the cologarithm of a number can be taken from the table as rapidly as the logarithm itself.

By using cologarithms the inconvenience of subtracting the logarithm of a divisor is avoided. For dividing by a number is equivalent to multiplying by its reciprocal. Hence, instead of subtracting the logarithm of a divisor its cologarithm may be added.

Computation by Logarithms.

21. (1) Find the value of x, if $x = 72214 \times 0.08203$.

Page 14.	log 72214	$= 4.85862$
Page 16.	log 0.08203	$= 8.91397 - 10$
By § 2.	log x	$= 3.77259$
Page 11.	x	$= 5923.63$

(2) Find the value of x, if $x = 5250 \div 23487$.

Page 10.	log 5250	$= 3.72016$
Page 4.	colog 23487	$= 5.62917 - 10$
Page 4.	log x	$= 9.34933 - 10 = $ log 0.22353
	∴ x	$= 0.22353$

(3) Find the value of x, if $x = \dfrac{7.56 \times 4667 \times 567}{899.1 \times 0.00337 \times 23435}$

Page 15.	log 7.56	$= 0.87852$
Page 9.	log 4667	$= 3.66904$
Page 11.	log 567	$= 2.75358$
Page 17.	colog 899.1	$= 7.04619 - 10$
Page 6.	colog 0.00337	$= 2.47237$
Page 4.	colog 23435	$= 5.63013 - 10$
Page 5.	log x	$= 2.44983 = $ log 281.73
	∴ x	$= 281.73$

(4) Find the cube of 376.

Page 7.	log 376	$= 2.57519$
Multiply by 3 (§ 4),		3
Page 10.	log 376^3	$= 7.72557 = $ log 53158600
	∴ 376^3	$= 53158600$

(5) Find the square of 0.003278.

Page 6.	log 0.003278 =	$7.51561 - 10$
		2
Page 2.	log 0.003278^2 =	$15.03122 - 20 = $ log 0.000010745
	∴ 0.003278^2 =	0.000010745

(6) Find the square root of 8322.

Page 16.	log 8322	$= 3.92023$
Divide by 2 (§ 5),		2) 3.92023
	log $\sqrt{8322}$	$= 1.96012 = $ log 91.226
	∴ $\sqrt{8322}$	$= 91.226$

If the given number is a proper fraction, its logarithm will have as a subtrahend 10 or a multiple of 10. In this case, before dividing the logarithm by the index of the root, both the subtrahend and the num-

ber preceding the mantissa should be increased by such a number as will make the subtrahend, when divided by the index of the root, 10 or a multiple of 10.

(7) Find the square root of 0.000043641.

Page 8.   log 0.000043641   = 5.63989 — 10
                                              10   — 10
Divide by 2 (§ 5),   2)15.63989 — 20
Page 13. log $\sqrt{0.000043641}$ = 7.81995 — 10 = log 0.0066062
          ∴ $\sqrt{0.000043641}$ = 0.0066062

(8) Find the sixth root of 0.076553.

Page 15. log 0.076553   = 8.88397 — 10
                                              50   — 50
Divide by 6 (§ 5),   6)58.88397 — 60
Page 13 log $\sqrt[6]{0.076553}$ = 9.81400 — 10 = log 0.65163
          ∴ $\sqrt[6]{0.076553}$ = 0.65163

TABLE II.

22. This table (page 20) contains the value of the number π, its most useful combinations, and their logarithms.

Find the length of an arc of 47° 32' 57" in a unit circle.

47° 32' 57" = 171177"
log 171177   = 5.23344
$\log \frac{1}{a''}$ = 4.68557 — 10
log arc 47° 32' 57" = 9.91901 — 10 = log 0.82994
∴ length of arc   = 0.82994

Find the angle if the length of its arc in a unit circle = 0.54936.

log 0.54936   = 9.73986 — 10
$\text{colog} \frac{1}{a''} = \log a''$ = 5.31443
log angle   = 5.05429 = log 113316
∴ angle   = 113316" = 31° 28' 36"

23. The relations between arcs and angles given in Table II. are readily deduced from the circular measure of an angle.

In **Circular Measure** an angle is defined by the equation

$$\text{angle} = \frac{\text{arc}}{\text{radius}},$$

in which the word arc denotes the length of the arc corresponding to the angle, when both arc and radius are expressed in terms of the *same linear unit.*

Since the arc and radius for a given angle in different circles vary in the same ratio, the value of the angle given by this equation is independent of the value of the radius. If the radius is unity, the equation defining the angle becomes

$$\text{angle} = \text{arc}.$$

That is, in circular measure an angle is measured by the length of its arc in a unit circle. Therefore,

If the arc = circumference,   the angle = 2π.
If the arc = semicircumference, the angle = π.
If the arc = quadrant,   the angle = $\frac{1}{2}\pi$.
If the arc = radius $(= 1)$,   the angle = 1 ;

that is, in circular measure the angular unit is the angle whose arc is equal in length to the radius of the circle.

Since 180° in common measure equals π units in circular measure, therefore

$$1° \text{ in common measure } = \frac{\pi}{180} \text{ units in circular measure ;}$$

$$1 \text{ unit in circular measure} = \frac{180°}{\pi} \text{ in common measure.}$$

By means of these two equations, the value of an angle expressed in one measure may be changed to its value in the other measure.

Thus, the angle whose arc is equal to the radius is an angle of 1 unit in circular measure, and is equal to $\dfrac{180°}{\pi}$, or 57° 17′ 45″, very nearly.

TABLE III.

24. This table (pp. 21–49) contains the logarithms of the trigonometric functions of angles. In order to avoid negative characteristics, the characteristic of every logarithm is printed 10 too large. Therefore, − 10 is to be annexed to each logarithm.

On pages 28–49 the characteristic remains the same throughout each column, and is printed at the top and the bottom of the column. But on page 30 the characteristic changes one unit in value at the places marked with bars. Above these bars the proper characteristic is printed at the top, and below them at the bottom, of the column.

25. On pages 28–49 the log sin, log tan, log cot, and log cos, of 1° to 89°, are given to every minute. Conversely, this part of the table gives the value of the angle to the nearest minute when log sin, log tan, log cot, or log cos is known, provided log sin or log cos lies between 8.23822 and 9.99992, and log tan or log cot lies between 8.23829 and 11.76171.

If the exact value of the given logarithm of a function is not found in the table, the value nearest to it is to be taken, unless interpolation is employed as explained in § 26.

If the angle is less than 45°, the number of degrees is printed at the top of the page, and the number of minutes in the column to the left of the columns containing the logarithm. If the angle is greater than 45°, the number of degrees is printed at the bottom of the page, and the number of minutes in the column to the right of the columns containing the logarithms.

If the angle is less than 45°, the names of its functions are printed at the top of the page ; if greater than 45°, at the bottom of the page. Thus,

Page 38. log sin 21° 37' = 9.56631 − 10.
Page 45. log cot 36° 53' = 10.12473 − 10 = 0.12473.
Page 37. log cos 69° 14' = 9.54969 − 10.
Page 49. log tan 45° 59' = 10.01491 − 10 = 0.01491.
Page 48. If log cos = 9.87468 − 10, angle = 41° 28'.
Page 34. If log cot = 9.89353 − 10, angle = 76° 6'.
If log sin = 9.47760 − 10, the nearest log sin in the table is 9.47774 − 10 (page 36), and the angle corresponding to this value is 17° 29'.
If log tan = 0.76520 = 10.76520 − 10, the nearest log tan in the table is 10.76490 − 10 (page 32), and the angle corresponding to this value is 80° 15'.

26. If it is desired to obtain the logarithms of the functions of angles that contain seconds, or to obtain the value of the angle in degrees, minutes, and seconds, from the logarithms of its functions, interpolation must be employed. Here it must be remembered that,

The difference between two consecutive angles in the table is 60''.

Log sin and log tan increase as the **angle increases** ; log cos and log cot diminish as the angle increases.

Find log tan 70° 46' 8''.

Page 37. log tan 70° 46' = 0.45731.
The difference between the mantissas of log tan 70° 46' and log tan 70° 47' is 41, and $\frac{8}{60}$ of 41 = 5.
As the function is increasing, the 5 must be added to the figure in the fifth place of the mantissa 45731 ; and
Therefore log tan 70° 46' 8'' = 0.45736.

Find log cos 47° 35' 4''.

Page 48. log cos 47° 35' = 9.82899 − 10.
The difference between this mantissa and the mantissas of the next log cos is 14, and $\frac{4}{60}$ of 14 = 1.
As the function is decreasing, the 1 must be subtracted from the figure in the fifth place of the mantissa 82899 ; and
Therefore log cos 47° 35' 4'' = 9.82898 − 10.

Since the arc and radius for a given angle in different circles vary in the same ratio, the value of the angle given by this equation is independent of the value of the radius. If the radius is unity, the equation defining the angle becomes

$$\text{angle} = \text{arc.}$$

That is, in circular measure an angle is measured by the length of its arc in a unit circle. Therefore,

> If the arc = circumference, the angle = 2π.
> If the arc = semicircumference, the angle = π.
> If the arc = quadrant, the angle = $\frac{1}{2}\pi$.
> If the arc = radius $(= 1)$, the angle = 1 ;

that is, in circular measure the angular unit is the angle whose arc is equal in length to the radius of the circle.

Since 180° in common measure equals π units in circular measure, therefore

$$1° \text{ in common measure } = \frac{\pi}{180} \text{ units in circular measure ;}$$

$$1 \text{ unit in circular measure } = \frac{180°}{\pi} \text{ in common measure.}$$

By means of these two equations, the value of an angle expressed in one measure may be changed to its value in the other measure.

Thus, the angle whose arc is equal to the radius is an angle of 1 unit in circular measure, and is equal to $\frac{180°}{\pi}$, or 57° 17′ 45″, very nearly.

TABLE III.

24. This table (pp. 21–49) contains the logarithms of the trigonometric functions of angles. In order to avoid negative characteristics, the characteristic of every logarithm is printed 10 too large. Therefore, − 10 is to be annexed to each logarithm.

On pages 28–49 the characteristic remains the same throughout each column, and is printed at the top and the bottom of the column. But on page 30 the characteristic changes one unit in value at the places marked with bars. Above these bars the proper characteristic is printed at the top, and below them at the bottom, of the column.

25. On pages 28–49 the log sin, log tan, log cot, and log cos, of 1° to 89°, are given to every minute. Conversely, this part of the table gives the value of the angle to the nearest minute when log sin, log tan, log cot, or log cos is known, provided log sin or log cos lies between 8.23822 and 9.99992, and log tan or log cot lies between 8.23829 and 11.76171.

If the exact value of the given logarithm of a function is not found in the table, the value nearest to it is to be taken, unless interpolation is employed as explained in § 26.

If the angle is less than 45°, the number of degrees is printed at the top of the page, and the number of minutes in the column left of the columns containing the logarithm. If the angle is greater than 45°, the number of degrees is printed at the bottom of the page and the number of minutes in the column to the right of the column containing the logarithms.

If the angle is less than 45°, the names of its functions are printed at the top of the page; if greater than 45°, at the bottom of the page. Thus,

Page 38. log sin 21° 37′ = 9.56631 — 10.
Page 45. log cot 36° 53′ = 10.12473 — 10 = 0.12473.
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Page 48. If log cos = 9.87468 — 10, angle = 41° 28′.
Page 34. If log cot = 9.39353 — 10, angle = 76° 6′.
If log sin = 9.47760 — 10, the nearest log sin in the table is 9.4   (page 36), and the angle corresponding to this value is 17° 29′.
If log tan = 0.76520 = 10.76520 — 10, the nearest log tan is 10.76490 — 10 (page 32), and the angle corresponding to this value

26. If it is desired to obtain the logarithms of the angles that contain seconds, or to obtain the value of degrees, minutes, and seconds, from the logarithm, interpolation must be employed. Here it must be remembered

The difference between two consecutive angles

Log sin and log tan increase as the angle increases; log cot diminish as the angle increases.

Find log tan 70° 46′ 8″.
Page 37.   log tan 70° 46′ = 0.45731.
The difference between the mantissa
is 41, and $\frac{8}{60}$ of 41 = 5.
As the function is increasing, the 5 must be added; place of the mantissa 45731; and
Therefore log tan 70° 46′ 8″ = 0.45736

Find log cos 47° 35′ 4″.
Page 48.   log cos 47° 35′ = 9.82903 — 1
The difference between this mantissa and the mantissa
is 14, and $\frac{4}{60}$ of 14 = 1.
As the function is decreasing, the 1 must be subtracted from the mantissa 82903; and
therefore log cos 47° 35′ 4″ = 9.82902 — 10.

Find the angle for which $\log \sin = 9.45359 - 10$.

Page 35. The mantissa of the nearest smaller log sin in the table is 45334. The angle corresponding to this value is 16° 30'.

The difference between 45334 and the given mantissa, 45359, is 25.

The difference between 45334 and the next following mantissa, 45377, is 43, and $\frac{25}{43}$ of $60'' = 35''$.

As the function is increasing, the 35'' must be added to 16° 30'; and the required angle is 16° 30' 35''.

Find the angle for which $\log \cot = 0.73478$.

Page 32. The mantissa of the nearest smaller log cot in the table is 73415. The angle corresponding to this value is 10° 27'.

The difference between 73415 and the given mantissa is 63.

The difference between 73415 and next following mantissa is 71, and $\frac{63}{71}$ of $60'' = 53''$.

As the function is decreasing, the 53'' must be subtracted from 10° 27'; and the required angle is 10° 26' 7''.

27. If log sec or log csc of an angle is desired, it may be found from the table by the formulas,

$$\sec A = \frac{1}{\cos A} ; \quad \text{hence, } \log \sec A = \text{colog } \cos A.$$

$$\csc A = \frac{1}{\sin A} ; \quad \text{hence, } \log \csc A = \text{colog } \sin A.$$

Page 31.   log sec 8° 28'   = colog cos 8° 28'   = 0.00476.
Page 42.   log csc 59° 36' 44'' = colog sin 59° 36' 44'' = 0.06418.

28. If a given angle is between 0° and 1°, or between 89° and 90°; or, conversely, if a given log sin or log cos does *not* lie between the limits 8.23822 and 9.99992 in the table; or, if a given log tan or log cot does *not* lie between the limits 8.23829 and 11.76171 in the table; then pages 21–24 of Table III. must be used.

On page 21, log sin of angles between 0° and 0° 3', or log cos of the complementary angles between 89° 57' and 90°, are given to every second; for the angles between 0° and 0° 3', log tan = log sin, and log cos = 0.00000; for the angles between 89° 57' and 90°, log cot = log cos, and log sin = 0.00000.

On pages 22–24, log sin, log tan, and log cos of angles between 0° and 1°, or log cos, log cot, and log sin of the complementary angles between 89° and 90°, are given to every 10''.

Whenever log tan or log cot is not given, they may be found by the formulas,

log tan = colog cot.   log cot = colog tan.

Conversely, if a given log tan or log cot is not contained in the table, then the colog must be found; this will be the log cot or log tan, as the case may be, and will be contained in the table.

On pages 25–27 the logarithms of the functions of angles between 1° and 2°, or between 88° and 90°, are given in the manner employed on pages 22–24. These pages should be used if the angle lies between these limits, and if not only degrees and minutes, but degrees, minutes, and multiples of 10″ are given or required.

When the angle is between 0° and 2°, or 88° and 90°, and a greater degree of accuracy is desired than that given by the table, interpolation may be employed ; but for these angles interpolation does not always give true results, and it is better to use Table IV.

Find log tan 0° 2′ 47″, and log cos 89° 37′ 20″.

Page 21. log tan 0° 2′ 47″ = log sin 0° 2′ 47″ = 6.90829 − 10.
Page 23. log cos 89° 37′ 20″ = 7.81911 − 10.

Find log cot 0° 2′ 15″.

	10	− 10
Page 21. log tan 0° 2′ 15″ =	6.81591 − 10	
Therefore, log cot 0° 2′ 15″ =	3.18409	

Find log tan 89° 38′ 30″.

	10	− 10
Page 23. log cot 89° 38′ 30″ =	7.79617 − 10	
Therefore, log tan 89ᵈ 38′ 30″ =	2.20383	

Find the angle for which log tan = 6.92090 − 10.

Page 21. The nearest log tan is 6.92110 − 10.
The corresponding angle for which is 0° 2′ 52″.

Find the angle for which log cos = 7.70240 − 10.

Page 22. The nearest log cos is 7.70261 − 10.
The corresponding angle for which is 89° 42′ 40″.

Find the angle for which log cot = 2.37368.

This log cot is not contained in the table.
The colog cot = 7.62632 − 10 = log tan.
The log tan in the table nearest to this is (page 22) 7.62510 − 10, and the angle corresponding to this value of log tan is 0° 14′ 30″.

29. If an angle x is between 90° and 360°, it follows, from formulas established in Trigonometry, that,

between 90° and 180°,	between 180° and 270°,
log sin x = log sin $(180° − x)$,	log sin x = log sin $(x − 180°)_n$,
log cos x = log cos $(180° − x)_n$,	log cos x = log cos $(x − 180°)_n$,
log tan x = log tan $(180° − x)_n$,	log tan x = log tan $(x − 180°)$,
log cot x = log cot $(180° − x)_n$;	log cot x = log cot $(x − 180°)$;

between 270° and 360°,

$$\log \sin x = \log \sin (360° - x)_n,$$
$$\log \cos x = \log \cos (360° - x),$$
$$\log \tan x = \log \tan (360° - x)_n,$$
$$\log \cot x = \log \cot (360° - x)_n.$$

The letter n is placed (according to custom) after the logarithms of those functions which are negative in value.

The above formulas show, without further explanation, how to find by means of Table III. the logarithms of the functions of any angle between 90° and 360°.

Thus, $\log \sin 137° 46' 22'' = \log \sin \quad 42° 14' 38'' = 9.82756 \;-10.$
$\log \cos 137° 46' 22'' = \log_n \cos 42° 14' 38'' = 9.86940_n - 10.$
$\log \tan 137° 46' 22'' = \log_n \tan 42° 14' 38'' = 9.95815_n - 10.$
$\log \cot 137° 46' 22'' = \log_n \cot \; 42° 14' 38'' = 0.04185_n.$
$\log \sin 209° 32' 50'' = \log_n \sin 29° 32' 50'' = 9.69297_n - 10.$
$\log \cos 330° 27' 10'' = \log \cos \quad 29° 32' 50'' = 9.93949 \;-10.$

Conversely, to a given logarithm of a trigonometric function there correspond between 0° and 360° four angles, one angle in each quadrant, and so related that if x denote the acute angle, the other three angles are $180° - x$, $180° + x$, and $360° - x$.

If besides the given logarithm it is known whether the function is positive or negative, the ambiguity is confined to *two* quadrants, therefore to *two* angles.

Thus, if the log tan $= 9.47451 - 10$, the angles are 16° 36' 17'' in Quadrant I. and 196° 36' 17'' in Quadrant III.; but if the log tan $= 9.47451_n - 10$, the angles are 163° 23' 43'' in Quadrant II. and 343° 23' 43'' in Quadrant IV.

To remove all ambiguity, further conditions are required, or a knowledge of the special circumstances connected with the problem in question.

TABLE IV.

30. This table (page 50) must be used when great accuracy is desired in working with angles between 0° and 2°, or between 88° and 90°.

The values of **S** and **T** are such that when the angle a is expressed in seconds,

$$S = \log \sin a - \log a'',$$
$$T = \log \tan a - \log a''.$$

Hence follow the formulas given on page 50.

The values of **S** and **T** are printed with the characteristic 10 too large, and in using them -10 must always be annexed.

Find log sin 0° 58' 17".

$$0° 58' 17'' = 3497''$$
$$\log 3497 = 3.54370$$
$$S = 4.68555 - 10$$
$$\overline{\hspace{3cm}}$$
$$\log \sin 0° 58' 17'' = 8.22925 - 10$$

Find log cos 88° 26' 41.2".

$$90° - 88° 26' 41.2'' = 1° 33' 18.8''$$
$$= 5598.8''$$
$$\log 5598.8 = 3.74809$$
$$S = 4.68552 - 10$$
$$\overline{\hspace{3cm}}$$
$$\log \cos 88° 26' 41.2'' = 8.43361 - 10$$

Find log tan 0° 52' 47.5".

$$0° 52' 47.5'' = 3167.5''$$
$$\log 3167.5 = 3.50072$$
$$T = 4.68561 - 10$$
$$\overline{\hspace{3cm}}$$
$$\log \tan 0° 52' 47.5'' = 8.18633 - 10$$

Find log tan 89° 54' 37.362".

$$90° - 89° 54' 37.362'' = 0° 5' 22.638''$$
$$= 322.638''$$
$$\log 322.638 = 2.50871$$
$$T = 4.68558 - 10$$
$$\overline{\hspace{3cm}}$$
$$\log \cot 89° 54' 37.362'' = 7.19429 - 10$$
$$\log \tan 89° 54' 37.362'' = 2.80571$$

Find the angle, if log sin = 6.72306 − 10.

$$6.72306 - 10$$
$$S = 4.68557 - 10$$
$$\overline{\hspace{3cm}}$$
$$\text{Subtract,} \quad 2.03749 \quad = \log 109.015$$
$$109.015'' \quad = 0° 1' 49.015''$$

Find the angle for which log cot = 1.67604.

$$\text{colog cot} = 8.32396 - 10$$
$$T = 4.68564 - 10$$
$$\overline{\hspace{3cm}}$$
$$\text{Subtract,} \quad 3.63832 \quad = \log 4348.3$$
$$4348.3'' = 1° 12' 28.3''$$

Find the angle for which log tan = 1.55407.

$$\text{colog tan} = 8.44593 - 10$$
$$T = 4.68569 - 10$$
$$\overline{\hspace{3cm}}$$
$$\text{Subtract,} \quad 3.76024 \quad = \log 5757.6$$
$$5757.6'' = 1° 35' 57.6'',$$
and $\quad 90° - 1° 35' 57.6'' = 88° 24' 2.4''.$
Therefore, the angle required is 88° 24' 2.4".

TABLE V.

31. Table V. (pp. 51–53), contains the natural sines, cosines, tangents, and cotangents of angles from 0° to 90°, at intervals of 10'. If greater accuracy is desired it may be obtained by interpolation.

TABLE VI.

32. This table (p. 54), containing the circumferences and areas of circles, does not require explanation.

NOTE. In preparing the preceding explanations, free use has been made of the Logarithmic Tables by F. G. Gauss, from which, also, Tables II. and VI. have been taken.

TABLE VII.

33. This table (pp. 55–60) gives the latitude and departure to three places of decimals for distances from 1 to 10, corresponding to bearings from 0° to 90° at intervals of 15′.

If the bearing does not exceed 45° it is found in the *left*-hand column, and the designations of the columns under "Distance" are taken from the *top* of the page; but if the bearing exceeds 45°, it is found in the *right*-hand column, and the designations of the columns under "Distance" are taken from the *bottom* of the page.

The method of using the table will be made plain by the following examples : —

(1) Let it be required to find the latitude and departure of the course N. 35° 15′ E. 6 chains.

On p. 60, left-hand column, look for 35° 15′; opposite this bearing, in the vertical column headed "Distance 6," are found 4.900 and 3.463 under the headings "Latitude" and "Departure" respectively. Hence, latitude or northing = 4.900 chains, and departure or easting = 3.463 chains.

(2) Let it be required to find the latitude and departure of the course S. 87° W. 2 chains.

As the bearing exceeds 45°, we look in the right-hand column of p. 55, and opposite 87° in the column marked "Distance 2" we find (taking the designations of the columns from the bottom of the page) latitude = .105 chains, and departure = 1.997 chains. Hence, latitude or southing = .105 chains, and departure or westing = 1.997 chains.

(3) Let it be required to find the latitude and departure of the course N. 15° 45′ W. 27.36 chains.

In this case we find the required numbers for each figure of the distance separately, arranging the work as in the following table. In practice, only the last columns under "Latitude" and "Departure" are written.

Distance.	Latitude.	Departure.
20 = 2 × 10	1.925 × 10 = 19.25	0.543 × 10 = 5.43
7	6.737	1.90
0.3 = 3 ÷ 10	2.887 ÷ 10 = 0.289	0.814 ÷ 10 = 0.081
0.06 = 6 ÷ 100	5.775 ÷ 100 = 0.058	1.628 ÷ 100 = 0.016
27.36	26.334	7.427

Hence, latitude = 26.334 chains, and departure = 7.427 chains.

TABLE I.

THE

COMMON OR BRIGGS LOGARITHMS

OF THE

NATURAL NUMBERS

From 1 to 10000.

1—100

N	log	N	log	N	log	N	log	N	log
1	0. 00 000	21	1. 32 222	41	1. 61 278	61	1. 78 533	81	1. 90 849
2	0. 30 103	22	1. 34 242	42	1. 62 325	62	1. 79 239	82	1. 91 381
3	0. 47 712	23	1. 36 173	43	1. 63 347	63	1. 79 934	83	1. 91 908
4	0. 60 206	24	1. 38 021	44	1. 64 345	64	1. 80 618	84	1. 92 428
5	0. 69 897	25	1. 39 794	45	1. 65 321	65	1. 81 291	85	1. 92 942
6	0. 77 815	26	1. 41 497	46	1. 66 276	66	1. 81 954	86	1. 93 450
7	0. 84 510	27	1. 43 136	47	1. 67 210	67	1. 82 607	87	1. 93 952
8	0. 90 309	28	1. 44 716	48	1. 68 124	68	1. 83 251	88	1. 94 448*
9	0. 95 424	29	1. 46 240	49	1. 69 020	69	1. 83 885	89	1. 94 939
10	1. 00 000	30	1. 47 712	50	1. 69 897	70	1. 84 510	90	1. 95 424
11	1. 04 139	31	1. 49 136	51	1. 70 757	71	1. 85 126	91	1. 95 904
12	1. 07 918	32	1. 50 515	52	1. 71 600	72	1. 85 733	92	1. 96 379
13	1. 11 394	33	1. 51 851	53	1. 72 428	73	1. 86 332	93	1. 96 848
14	1. 14 613	34	1. 53 148	54	1. 73 239	74	1. 86 923	94	1. 97 313
15	1. 17 609	35	1. 54 407	55	1. 74 036	75	1. 87 506	95	1. 97 772
16	1. 20 412	36	1. 55 630	56	1. 74 819	76	1. 88 081	96	1. 98 227
17	1. 23 045	37	1. 56 820	57	1. 75 587	77	1. 88 649	97	1. 98 677
18	1. 25 527	38	1. 57 978	58	1. 76 343	78	1. 89 209	98	1. 99 123
19	1. 27 875	39	1. 59 106	59	1. 77 085	79	1. 89 763	99	1. 99 564
20	1. 30 103	40	1. 60 206	60	1. 77 815	80	1. 90 309	100	2. 00 000
N	log	N	log	N	log	N	log	N	log

N	0	1	2	3	4	5	6	7	8	9
100	00 000	00 043	00 087	00 130	00 173	00 217	00 260	00 303	00 346	00 389
101	00 432	00 475	00 518	00 561	00 604	00 647	00 689	00 732	00 775	00 817
102	00 860	00 903	00 945	00 988	01 030	01 072	01 115	01 157	01 199	01 242
103	01 284	01 326	01 368	01 410	01 452	01 494	01 536	01 578	01 620	01 662
104	01 703	01 745	01 787	01 828	01 870	01 912	01 953	01 995	02 036	02 078
105	02 119	02 160	02 202	02 243	02 284	02 325	02 366	02 407	02 449	02 490
106	02 531	02 572	02 612	02 653	02 694	02 735	02 776	02 816	02 857	02 898
107	02 938	02 979	03 019	03 060	03 100	03 141	03 181	03 222	03 262	03 302
108	03 342	03 383	03 423	03 463	03 503	03 543	03 583	03 623	03 663	03 703
109	03 743	03 782	03 822	03 862	03 902	03 941	03 981	04 021	04 060	04 100
110	04 139	04 179	04 218	04 258	04 297	04 336	04 376	04 415	04 454	04 493
111	04 532	04 571	04 610	04 650	04 689	04 727	04 766	04 805	04 844	04 883
112	04 922	04 961	04 999	05 038	05 077	05 115	05 154	05 192	05 231	05 269
113	05 308	05 346	05 385	05 423	05 461	05 500	05 538	05 576	05 614	05 652
114	05 690	05 729	05 767	05 805	05 843	05 881	05 918	05 956	05 994	06 032
115	06 070	06 108	06 145	06 183	06 221	06 258	06 296	06 333	06 371	06 408
116	06 446	06 483	06 521	06 558	06 595	06 633	06 670	06 707	06 744	06 781
117	06 819	06 856	06 893	06 930	06 967	07 004	07 041	07 078	07 115	07 151
118	07 188	07 225	07 262	07 298	07 335	07 372	07 408	07 445	07 482	07 518
119	07 555	07 591	07 628	07 664	07 700	07 737	07 773	07 809	07 846	07 882
120	07 918	07 954	07 990	08 027	08 063	08 099	08 135	08 171	08 207	08 243
121	08 279	08 314	08 350	08 386	08 422	08 458	08 493	08 529	08 565	08 600
122	08 636	08 672	08 707	08 743	08 778	08 814	08 849	08 884	08 920	08 955
123	08 991	09 026	09 061	09 096	09 132	09 167	09 202	09 237	09 272	09 307
124	09 342	09 377	09 412	09 447	09 482	09 517	09 552	09 587	09 621	09 656
125	09 691	09 726	09 760	09 795	09 830	09 864	09 899	09 934	09 968	10 003
126	10 037	10 072	10 106	10 140	10 175	10 209	10 243	10 278	10 312	10 346
127	10 380	10 415	10 449	10 483	10 517	10 551	10 585	10 619	10 653	10 687
128	10 721	10 755	10 789	10 823	10 857	10 890	10 924	10 958	10 992	11 025
129	11 059	11 093	11 126	11 160	11 193	11 227	11 261	11 294	11 327	11 361
130	11 394	11 428	11 461	11 494	11 528	11 561	11 594	11 628	11 661	11 694
131	11 727	11 760	11 793	11 826	11 860	11 893	11 926	11 959	11 992	12 024
132	12 057	12 090	12 123	12 156	12 189	12 222	12 254	12 287	12 320	12 352
133	12 385	12 418	12 450	12 483	12 516	12 548	12 581	12 613	12 646	12 678
134	12 710	12 743	12 775	12 808	12 840	12 872	12 905	12 937	12 969	13 001
135	13 033	13 066	13 098	13 130	13 162	13 194	13 226	13 258	13 290	13 322
136	13 354	13 386	13 418	13 450	13 481	13 513	13 545	13 577	13 609	13 640
137	13 672	13 704	13 735	13 767	13 799	13 830	13 862	13 893	13 925	13 956
138	13 988	14 019	14 051	14 082	14 114	14 145	14 176	14 208	14 239	14 270
139	14 301	14 333	14 364	14 395	14 426	14 457	14 489	14 520	14 551	14 582
140	14 613	14 644	14 675	14 706	14 737	14 768	14 799	14 829	14 860	14 891
141	14 922	14 953	14 983	15 014	15 045	15 076	15 106	15 137	15 168	15 198
142	15 229	15 259	15 290	15 320	15 351	15 381	15 412	15 442	15 473	15 503
143	15 534	15 564	15 594	15 625	15 655	15 685	15 715	15 746	15 776	15 806
144	15 836	15 866	15 897	15 927	15 957	15 987	16 017	16 047	16 077	16 107
145	16 137	16 167	16 197	16 227	16 256	16 286	16 316	16 346	16 376	16 406
146	16 435	16 465	16 495	16 524	16 554	16 584	16 613	16 643	16 673	16 702
147	16 732	16 761	16 791	16 820	16 850	16 879	16 909	16 938	16 967	16 997
148	17 026	17 056	17 085	17 114	17 143	17 173	17 202	17 231	17 260	17 289
149	17 319	17 348	17 377	17 406	17 435	17 464	17 493	17 522	17 551	17 580
150	17 609	17 638	17 667	17 696	17 725	17 754	17 782	17 811	17 840	17 869
N	0	1	2	3	4	5	6	7	8	9

N	0	1	2	3	4	5	6	7	8	9
150	17 609	17 638	17 667	17 696	17 725	17 754	17 782	17 811	17 840	17 869
151	17 898	17 926	17 955	17 984	18 013	18 041	18 070	18 099	18 127	18 156
152	18 184	18 213	18 241	18 270	18 298	18 327	18 355	18 384	18 412	18 441
153	18 469	18 498	18 526	18 554	18 583	18 611	18 639	18 667	18 696	18 724
154	18 752	18 780	18 808	18 837	18 865	18 893	18 921	18 949	18 977	19 005
155	19 033	19 061	19 089	19 117	19 145	19 173	19 201	19 229	19 257	19 285
156	19 312	19 340	19 368	19 396	19 424	19 451	19 479	19 507	19 535	19 562
157	19 590	19 618	19 645	19 673	19 700	19 728	19 756	19 783	19 811	19 838
158	19 866	19 893	19 921	19 948	19 976	20 003	20 030	20 058	20 085	20 112
159	20 140	20 167	20 194	20 222	20 249	20 276	20 303	20 330	20 358	20 385
160	20 412	20 439	20 466	20 493	20 520	20 548	20 575	20 602	20 629	20 656
161	20 683	20 710	20 737	20 763	20 790	20 817	20 844	20 871	20 898	20 925
162	20 952	20 978	21 005	21 032	21 059	21 085	21 112	21 139	21 165	21 192
163	21 219	21 245	21 272	21 299	21 325	21 352	21 378	21 405	21 431	21 458
164	21 484	21 511	21 537	21 564	21 590	21 617	21 643	21 669	21 696	21 722
165	21 748	21 775	21 801	21 827	21 854	21 880	21 906	21 932	21 958	21 985
166	22 011	22 037	22 063	22 089	22 115	22 141	22 167	22 194	22 220	22 246
167	22 272	22 298	22 324	22 350	22 376	22 401	22 427	22 453	22 479	22 505
168	22 531	22 557	22 583	22 608	22 634	22 660	22 686	22 712	22 737	22 763
169	22 789	22 814	22 840	22 866	22 891	22 917	22 943	22 968	22 994	23 019
170	23 045	23 070	23 096	23 121	23 147	23 172	23 198	23 223	23 249	23 274
171	23 300	23 325	23 350	23 376	23 401	23 426	23 452	23 477	23 502	23 528
172	23 553	23 578	23 603	23 629	23 654	23 679	23 704	23 729	23 754	23 779
173	23 805	23 830	23 855	23 880	23 905	23 930	23 955	23 980	24 005	24 030
174	24 055	24 080	24 105	24 130	24 155	24 180	24 204	24 229	24 254	24 279
175	24 304	24 329	24 353	24 378	24 403	24 428	24 452	24 477	24 502	24 527
176	24 551	24 576	24 601	24 625	24 650	24 674	24 699	24 724	24 748	24 773
177	24 797	24 822	24 846	24 871	24 895	24 920	24 944	24 969	24 993	25 018
178	25 042	25 066	25 091	25 115	25 139	25 164	25 188	25 212	25 237	25 261
179	25 285	25 310	25 334	25 358	25 382	25 406	25 431	25 455	25 479	25 503
180	25 527	25 551	25 575	25 600	25 624	25 648	25 672	25 696	25 720	25 744
181	25 768	25 792	25 816	25 840	25 864	25 888	25 912	25 935	25 959	25 983
182	26 007	26 031	26 055	26 079	26 102	26 126	26 150	26 174	26 198	26 221
183	26 245	26 269	26 293	26 316	26 340	26 364	26 387	26 411	26 435	26 458
184	26 482	26 505	26 529	26 553	26 576	26 600	26 623	26 647	26 670	26 694
185	26 717	26 741	26 764	26 788	26 811	26 834	26 858	26 881	26 905	26 928
186	26 951	26 975	26 998	27 021	27 045	27 068	27 091	27 114	27 138	27 161
187	27 184	27 207	27 231	27 254	27 277	27 300	27 323	27 346	27 370	27 393
188	27 416	27 439	27 462	27 485	27 508	27 531	27 554	27 577	27 600	27 623
189	27 646	27 669	27 692	27 715	27 738	27 761	27 784	27 807	27 830	27 852
190	27 875	27 898	27 921	27 944	27 967	27 989	28 012	28 035	28 058	28 081
191	28 103	28 126	28 149	28 171	28 194	28 217	28 240	28 262	28 285	28 307
192	28 330	28 353	28 375	28 398	28 421	28 443	28 466	28 488	28 511	28 533
193	28 556	28 578	28 601	28 623	28 646	28 668	28 691	28 713	28 735	28 758
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196	29 226	29 248	29 270	29 292	29 314	29 336	29 358	29 380	29 403	29 425
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397	59 879	59 890	59 901	59 912	59 923	59 934	59 945	59 956	59 966	59 977
398	59 988	59 999	60 010	60 021	60 032	60 043	60 054	60 065	60 076	60 086
399	60 097	60 108	60 119	60 130	60 141	60 152	60 163	60 173	60 184	60 195
400	60 206	60 217	60 228	60 239	60 249	60 260	60 271	60 282	60 293	60 304
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401	60 314	60 325	60 336	60 347	60 358	60 369	60 379	60 390	60 401	60 412
402	60 423	60 433	60 444	60 455	60 466	60 477	60 487	60 498	60 509	60 520
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405	60 746	60 756	60 767	60 778	60 788	60 799	60 810	60 821	60 831	60 842
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409	61 172	61 183	61 194	61 204	61 215	61 225	61 236	61 247	61 257	61 268
410	61 278	61 289	61 300	61 310	61 321	61 331	61 342	61 352	61 363	61 374
411	61 384	61 395	61 405	61 416	61 426	61 437	61 448	61 458	61 469	61 479
412	61 490	61 500	61 511	61 521	61 532	61 542	61 553	61 563	61 574	61 584
413	61 595	61 606	61 616	61 627	61 637	61 648	61 658	61 669	61 679	61 690
414	61 700	61 711	61 721	61 731	61 742	61 752	61 763	61 773	61 784	61 794
415	61 805	61 815	61 826	61 836	61 847	61 857	61 868	61 878	61 888	61 899
416	61 909	61 920	61 930	61 941	61 951	61 962	61 972	61 982	61 993	62 003
417	62 014	62 024	62 034	62 045	62 055	62 066	62 076	62 086	62 097	62 107
418	62 118	62 128	62 138	62 149	62 159	62 170	62 180	62 190	62 201	62 211
419	62 221	62 232	62 242	62 252	62 263	62 273	62 284	62 294	62 304	62 315
420	62 325	62 335	62 346	62 356	62 366	62 377	62 387	62 397	62 408	62 418
421	62 428	62 439	62 449	62 459	62 469	62 480	62 490	62 500	62 511	62 521
422	62 531	62 542	62 552	62 562	62 572	62 583	62 593	62 603	62 613	62 624
423	62 634	62 644	62 655	62 665	62 675	62 685	62 696	62 706	62 716	62 726
424	62 737	62 747	62 757	62 767	62 778	62 788	62 798	62 808	62 818	62 829
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444	64 738	64 748	64 758	64 768	64 777	64 787	64 797	64 807	64 816	64 826
445	64 836	64 846	64 856	64 865	64 875	64 885	64 895	64 904	64 914	64 924
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448	65 128	65 137	65 147	65 157	65 167	65 176	65 186	65 196	65 205	65 215
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451	65 418	65 427	65 437	65 447	65 456	65 466	65 475	65 485	65 49<u>5</u>	65 504
452	65 514	65 523	65 533	65 543	65 552	65 562	65 571	65 581	65 591	65 600
453	65 610	65 619	65 629	65 639	65 648	65 658	65 667	65 677	65 686	65 696
454	65 706	65 715	65 72<u>5</u>	65 734	65 744	65 753	65 763	65 772	65 782	65 792
455	65 801	65 811	65 820	65 830	65 839	65 849	65 858	65 868	65 877	65 887
456	65 896	65 906	65 916	65 925	65 93<u>5</u>	65 944	65 954	65 963	65 973	65 982
457	65 992	66 001	66 011	66 020	66 030	66 039	66 049	66 058	66 068	66 077
458	66 087	66 096	66 106	66 11<u>5</u>	66 124	66 134	66 143	66 153	66 162	66 172
459	66 181	66 191	66 200	66 210	66 219	66 229	66 238	66 247	66 257	66 266
460	66 276	66 285	66 29<u>5</u>	66 304	66 314	66 323	66 332	66 342	66 351	66 361
461	66 370	66 380	66 389	66 398	66 408	66 417	66 427	66 436	66 445	66 45<u>5</u>
462	66 464	66 474	66 483	66 492	66 502	66 511	66 521	66 530	66 539	66 549
463	66 558	66 567	66 577	66 586	66 596	66 60<u>5</u>	66 614	66 624	66 633	66 642
464	66 652	66 661	66 671	66 680	66 689	66 699	66 708	66 717	66 727	66 736
465	66 745	66 75<u>5</u>	66 764	66 773	66 783	66 792	66 801	66 811	66 820	66 829
466	66 839	66 848	66 857	66 867	66 876	66 885	66 894	66 904	66 913	66 922
467	66 932	66 941	66 950	66 960	66 969	66 978	66 987	66 997	67 006	67 015
468	67 02<u>5</u>	67 034	67 043	67 052	67 062	67 071	67 080	67 089	67 099	67 108
469	67 117	67 127	67 136	67 145	67 154	67 164	67 173	67 182	67 191	67 201
470	67 210	67 219	67 228	67 237	67 247	67 256	67 265	67 274	67 284	67 293
471	67 302	67 311	67 321	67 330	67 339	67 348	67 357	67 367	67 376	67 38<u>5</u>
472	67 394	67 403	67 413	67 422	67 431	67 440	67 449	67 459	67 468	67 477
473	67 486	67 495	67 504	67 514	67 523	67 532	67 541	67 550	67 560	67 569
474	67 578	67 587	67 596	67 605	67 614	67 624	67 633	67 642	67 651	67 660
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476	67 761	67 770	67 779	67 788	67 797	67 806	67 815	67 82<u>5</u>	67 834	67 843
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482	68 30<u>5</u>	68 314	68 323	68 332	68 341	68 3<u>5</u>0	68 359	68 368	68 377	68 386
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484	68 48<u>5</u>	68 494	68 502	68 511	68 520	68 529	68 538	68 547	68 556	68 565
485	68 574	68 583	68 592	68 601	68 610	68 619	68 628	68 637	68 646	68 65<u>5</u>
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487	68 753	68 762	68 771	68 780	68 789	68 797	68 806	68 815	68 824	68 833
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489	68 931	68 940	68 949	68 958	68 966	68 975	68 984	68 993	69 002	69 011
490	69 020	69 028	69 037	69 046	69 055	69 064	69 073	69 082	69 090	69 099
491	69 108	69 117	69 126	69 13<u>5</u>	69 144	69 152	69 161	69 170	69 179	69 188
492	69 197	69 205	69 214	69 223	69 232	69 241	69 249	69 258	69 267	69 276
493	69 28<u>5</u>	69 294	69 302	69 311	69 320	69 329	69 338	69 346	69 355	69 364
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496	69 548	69 557	69 566	69 574	69 583	69 592	69 601	69 609	69 618	69 627
497	69 636	69 644	69 653	69 662	69 671	69 679	69 688	69 697	69 705	69 714
498	69 723	69 732	69 740	69 749	69 758	69 767	69 775	69 784	69 793	69 801
499	69 810	69 819	69 827	69 836	69 84<u>5</u>	69 854	69 862	69 871	69 880	69 888
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501	69 984	69 992	70 001	70 010	70 018	70 027	70 036	70 044	70 053	70 062
502	70 070	70 079	70 088	70 096	70 105	70 114	70 122	70 131	70 140	70 148
503	70 157	70 165	70 174	70 183	70 191	70 200	70 209	70 217	70 226	70 234
504	70 243	70 252	70 260	70 269	70 278	70 286	70 295	70 303	70 312	70 321
505	70 329	70 338	70 346	70 355	70 364	70 372	70 381	70 389	70 398	70 406
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531	72 509	72 518	72 526	72 534	72 542	72 550	72 558	72 567	72 575	72 583
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537	72 997	73 006	73 014	73 022	73 030	73 038	73 046	73 054	73 062	73 070
538	73 078	73 086	73 094	73 102	73 111	73 119	73 127	73 135	73 143	73 151
539	73 159	73 167	73 175	73 183	73 191	73 199	73 207	73 215	73 223	73 231
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542	73 400	73 408	73 416	73 424	73 432	73 440	73 448	73 456	73 464	73 472
543	73 480	73 488	73 496	73 504	73 512	73 520	73 528	73 536	73 544	73 552
544	73 560	73 568	73 576	73 584	73 592	73 600	73 608	73 616	73 624	73 632
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567	75 358	75 366	75 374	75 381	75 389	75 397	75 404	75 412	75 420	75 427
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571	75 664	75 671	75 679	75 686	75 694	75 702	75 709	75 717	75 724	75 732
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575	75 967	75 974	75 982	75 989	75 997	76 005	76 012	76 020	76 027	76 035
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577	76 118	76 125	76 133	76 140	76 148	76 155	76 163	76 170	76 178	76 185
578	76 193	76 200	76 208	76 215	76 223	76 230	76 238	76 245	76 253	76 260
579	76 268	76 275	76 283	76 290	76 298	76 305	76 313	76 320	76 328	76 335
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581	76 418	76 425	76 433	76 440	76 448	76 455	76 462	76 470	76 477	76 485
582	76 492	76 500	76 507	76 515	76 522	76 530	76 537	76 545	76 552	76 559
583	76 567	76 574	76 582	76 589	76 597	76 604	76 612	76 619	76 626	76 634
584	76 641	76 649	76 656	76 664	76 671	76 678	76 686	76 693	76 701	76 708
585	76 716	76 723	76 730	76 738	76 745	76 753	76 760	76 768	76 775	76 782
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591	77 159	77 166	77 173	77 181	77 188	77 195	77 203	77 210	77 217	77 225
592	77 232	77 240	77 247	77 254	77 262	77 269	77 276	77 283	77 291	77 298
593	77 305	77 313	77 320	77 327	77 335	77 342	77 349	77 357	77 364	77 371
594	77 379	77 386	77 393	77 401	77 408	77 415	77 422	77 430	77 437	77 444
595	77 452	77 459	77 466	77 474	77 481	77 488	77 495	77 503	77 510	77 517
596	77 525	77 532	77 539	77 546	77 554	77 561	77 568	77 576	77 583	77 590
597	77 597	77 605	77 612	77 619	77 627	77 634	77 641	77 648	77 656	77 663
598	77 670	77 677	77 685	77 692	77 699	77 706	77 714	77 721	77 728	77 735
599	77 743	77 750	77 757	77 764	77 772	77 779	77 786	77 793	77 801	77 808
600	77 815	77 822	77 830	77 837	77 844	77 851	77 859	77 866	77 873	77 880
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601	77 887	77 895	77 902	77 909	77 916	77 924	77 931	77 938	77 945	77 952
602	77 960	77 967	77 974	77 981	77 988	77 996	78 003	78 010	78 017	78 025
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605	78 176	78 183	78 190	78 197	78 204	78 211	78 219	78 226	78 233	78 240
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621	79 309	79 316	79 323	79 330	79 337	79 344	79 351	79 358	79 365	79 372
622	79 379	79 386	79 393	79 400	79 407	79 414	79 421	79 428	79 435	79 442
623	79 449	79 456	79 463	79 470	79 477	79 484	79 491	79 498	79 505	79 511
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625	79 588	79 595	79 602	79 609	79 616	79 623	79 630	79 637	79 644	79 650
626	79 657	79 664	79 671	79 678	79 685	79 692	79 699	79 706	79 713	79 720
627	79 727	79 734	79 741	79 748	79 754	79 761	79 768	79 775	79 782	79 789
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640	80 618	80 625	80 632	80 638	80 645	80 652	80 659	80 665	80 672	80 679
641	80 686	80 693	80 699	80 706	80 713	80 720	80 726	80 733	80 740	80 747
642	80 754	80 760	80 767	80 774	80 781	80 787	80 794	80 801	80 808	80 814
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654	81 558	81 564	81 571	81 578	81 584	81 591	81 598	81 604	81 611	81 617
655	81 624	81 631	81 637	81 644	81 651	81 657	81 664	81 671	81 677	81 684
656	81 690	81 697	81 704	81 710	81 717	81 723	81 730	81 737	81 743	81 750
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665	82 282	82 289	82 295	82 302	82 308	82 315	82 321	82 328	82 334	82 341
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687	83 696	83 702	83 708	83 715	83 721	83 727	83 734	83 740	83 746	83 753
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691	83 948	83 954	83 960	83 967	83 973	83 979	83 985	83 992	83 998	84 004
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694	84 136	84 142	84 148	84 155	84 161	84 167	84 173	84 180	84 186	84 192
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696	84 261	84 267	84 273	84 280	84 286	84 292	84 298	84 305	84 311	84 317
697	84 323	84 330	84 336	84 342	84 348	84 354	84 361	84 367	84 373	84 379
698	84 386	84 392	84 398	84 404	84 410	84 417	84 423	84 429	84 435	84 442
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702	84 634	84 640	84 646	84 652	84 658	84 665	84 671	84 677	84 683	84 689
703	84 696	84 702	84 708	84 714	84 720	84 726	84 733	84 739	84 745	84 751
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705	84 819	84 825	84 831	84 837	84 844	84 850	84 856	84 862	84 868	84 874
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707	84 942	84 948	84 954	84 960	84 967	84 973	84 979	84 985	84 991	84 997
708	85 003	85 009	85 016	85 022	85 028	85 034	85 040	85 046	85 052	85 058
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712	85 248	85 254	85 260	85 266	85 272	85 278	85 285	85 291	85 297	85 303
713	85 309	85 315	85 321	85 327	85 333	85 339	85 345	85 352	85 358	85 364
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717	85 552	85 558	85 564	85 570	85 576	85 582	85 588	85 594	85 600	85 606
718	85 612	85 618	85 625	85 631	85 637	85 643	85 649	85 655	85 661	85 667
719	85 673	85 679	85 685	85 691	85 697	85 703	85 709	85 715	85 721	85 727
720	85 733	85 739	85 745	85 751	85 757	85 763	85 769	85 775	85 781	85 788
721	85 794	85 800	85 806	85 812	85 818	85 824	85 830	85 836	85 842	85 848
722	85 854	85 860	85 866	85 872	85 878	85 884	85 890	85 896	85 902	85 908
723	85 914	85 920	85 926	85 932	85 938	85 944	85 950	85 956	85 962	85 968
724	85 974	85 980	85 986	85 992	85 998	86 004	86 010	86 016	86 022	86 028
725	86 034	86 040	86 046	86 052	86 058	86 064	86 070	86 076	86 082	86 088
726	86 094	86 100	86 106	86 112	86 118	86 124	86 130	86 136	86 141	86 147
727	86 153	86 159	86 165	86 171	86 177	86 183	86 189	86 195	86 201	86 207
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743	87 099	87 105	87 111	87 116	87 122	87 128	87 134	87 140	87 146	87 151
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745	87 216	87 221	87 227	87 233	87 239	87 245	87 251	87 256	87 262	87 268
746	87 274	87 280	87 286	87 291	87 297	87 303	87 309	87 315	87 320	87 326
747	87 332	87 338	87 344	87 349	87 355	87 361	87 367	87 373	87 379	87 384
748	87 390	87 396	87 402	87 408	87 413	87 419	87 425	87 431	87 437	87 442
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750	87 506	87 512	87 518	87 523	87 529	87 535	87 541	87 547	87 552	87 558
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752	87 622	87 628	87 633	87 639	87 645	87 651	87 656	87 662	87 668	87 674
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754	87 737	87 743	87 749	87 754	87 760	87 766	87 772	87 777	87 783	87 789
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765	88 366	88 372	88 377	88 383	88 389	88 395	88 400	88 406	88 412	88 417
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768	88 536	88 542	88 547	88 553	88 559	88 564	88 570	88 576	88 581	88 587
769	88 593	88 598	88 604	88 610	88 615	88 621	88 627	88 632	88 638	88 643
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772	88 762	88 767	88 773	88 779	88 784	88 790	88 795	88 801	88 807	88 812
773	88 818	88 824	88 829	88 835	88 840	88 846	88 852	88 857	88 863	88 868
774	88 874	88 880	88 885	88 891	88 897	88 902	88 908	88 913	88 919	88 925
775	88 930	88 936	88 941	88 947	88 953	88 958	88 964	88 969	88 975	88 981
776	88 986	88 992	88 997	89 003	89 009	89 014	89 020	89 025	89 031	89 037
777	89 042	89 048	89 053	89 059	89 064	89 070	89 076	89 081	89 087	89 092
778	89 098	89 104	89 109	89 115	89 120	89 126	89 131	89 137	89 143	89 148
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790	89 763	89 768	89 774	89 779	89 785	89 790	89 796	89 801	89 807	89 812
791	89 818	89 823	89 829	89 834	89 840	89 845	89 851	89 856	89 862	89 867
792	89 873	89 878	89 883	89 889	89 894	89 900	89 905	89 911	89 916	89 922
793	89 927	89 933	89 938	89 944	89 949	89 955	89 960	89 966	89 971	89 977
794	89 982	89 988	89 993	89 998	90 004	90 009	90 015	90 020	90 026	90 031
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796	90 091	90 097	90 102	90 108	90 113	90 119	90 124	90 129	90 135	90 140
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798	90 200	90 206	90 211	90 217	90 222	90 227	90 233	90 238	90 244	90 249
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801	90 363	90 369	90 374	90 380	90 385	90 390	90 396	90 401	90 407	90 412
802	90 417	90 423	90 428	90 434	90 439	90 445	90 450	90 455	90 461	90 466
803	90 472	90 477	90 482	90 488	90 493	90 499	90 504	90 509	90 515	90 520
804	90 526	90 531	90 536	90 542	90 547	90 553	90 558	90 563	90 569	90 574
805	90 580	90 585	90 590	90 596	90 601	90 607	90 612	90 617	90 623	90 628
806	90 634	90 639	90 644	90 650	90 655	90 660	90 666	90 671	90 677	90 682
807	90 687	90 693	90 698	90 703	90 709	90 714'	90 720	90 725	90 730	90 736
808	90 741	90 747	90 752	90 757	90 763	90 768	90 773	90 779	90 784	90 789
809	90 795	90 800	90 806	90 811	90 816	90 822	90 827	90 832	90 838	90 843
810	90 849	90 854	90 859	90 865	90 870	90 875	90 881	90 886	90 891	90 897
811	90 902	90 907	90 913	90 918	90 924	90 929	90 934	90 940	90 945	90 950
812	90 956	90 961	90 966	90 972	90 977	90 982	90 988	90 993	90 998	91 004
813	91 009	91 014	91 020	91 025	91 030	91 036	91 041	91 046	91 052	91 057
814	91 062	91 068	91 073	91 078	91·084	91 089	91 094	91 100	91 105	91 110
815	91 116	91 121	91 126	91 132	91 137	91 142	91 148	91 153	91 158	91 164
816	91 169	91 174	91 180	91 185	91 190	91 196	91 201	91 206	91 212	91 217
817	91 222	91 228	91 233	91 238	91 243	91 249	91 254	91 259	91 265	91 270
818	91 275	91 281	91 286	91 291	91 297	91 302	91 307	91 312	91 318	91 323
819	91 328	91 334	91 339	91 344	91 350	91 355	91 360	91 365	91 371	91 376
820	91 381	91 387	91 392	91 397	91 403	91 408	91 413	91 418	91 424	91 429
821	91 434	91 440	91 445	91 450	91 455	91 461	91 466	91 471	91 477	91 482
822	91 487	91 492	91 498	91 503	91 508	91 514	91 519	91 524'	91 529	91 535
823	91 540	91 545	91 551	91 556	91 561	91 566	91 572	91 577	91 582	91 587
824	91 593	91 598	91 603	91 609	91 614	91 619	91 624	91 630	91 635	91 640
825	91 645	91 651	91 656	91 661	91 666	91 672	91 677	91 682	91 687	91 693
826	91 698	91 703	91 709	91 714	91 719	91 724	91 730	91 735	91 740	91 745
827	91 751	91 756	91 761	91 766	91 772	91 777	91 782	91 787	91 793	91 798
828	91 803	91 808	91 814	91 819	91 824	91 829	91 834	91 840	91 845	91 850
829	91 855	91 861	91 866	91 871	91 876	91 882	91 887	91 892	91 897	91 903
830	91 908	91 913	91 918	91 924	91 929	91 934	91 939	91 944	91 950	91 955
831	91 960	91 965	91 971	91 976	91 981	91 986	91 991	91 997	92 002	92 007
832	92 012	92 018	92 023	92 028	92 033	92 038	92 044	92 049	92 054	92 059
833	92 065	92 070	92 075	92 080	92 085	92 091	92 096	92 101	92 106	92 111
834	92 117	92 122	92 127	92 132	92 137	92 143	92 148	92 153	92 158	92 163
835	92 169	92 174	92 179	92 184	92 189	92 195	92 200	92 205	92 210	92 215
836	92 221	92 226	92 231	92 236	92 241	92 247	92 252	92 257	92 262	92 267
837	92 273	92 278	92 283	92 288	92 293	92 298	92 304	92 309	92 314	92 319
838	92 324	92 330	92 335	92 340	92 345	92 350	92 355	92 361	92 366	92 371
839	92 376	92 381	92 387	92 392	92 397	92 402	92 407	92 412	92 418	92 423
840	92 428	92 433	92 438	92 443	92 449	92 454	92 459	92 464	92 469	92 474
841	92 480	92 485	92 490	92 495	92 500	92 505	92 511	92 516	92 521	92 526
842	92 531	92 536	92 542	92 547	92 552	92 557	92 562	92 567	92 572	92 578
843	92 583	92 588	92 593	92 598	92 603	92 609	92 614	92 619	92 624	92 629
844	92 634	92 639	92 645	92 650	92 655	92 660	92 665	92 670	92 675	92 681
845	92 686	92 691	92 696	92 701	92 706	92 711	92 716	92 722	92 727	92 732
846	92 737	92 742	92 747	92 752	92 758	92 763	92 768	92 773	92 778	92 783
847	92 788	92 793	92 799	92 804	92 809	92 814	92 819	92 824	92 829	92 834
848	92 840	92 845	92 850	92 855	92 860	92 865	92 870	92 875	92 881	92 886
849	92 891	92 896	92 901	92 906	92 911	92 916	92 921	92 927	92 932	92 937
850	92 942	92·947	92 952	92 957	92 962	92 967	92 973	92 978	92 983	92 988
N	0	1	2	3	4	5	6	7	8	9

N	0	1	2	3	4	5	6	7	8	9
850	92 942	92 947	92 952	92 957	92 962	92 967	92 973	92 978	92 983	92 988
851	92 993	92 998	93 003	93 008	93 013	93 018	93 024	93 029	93 034	93 039
852	93 044	93 049	93 054	93 059	93 064	93 069	93 075	93 080	93 085	93 090
853	93 095	93 100	93 105	93 110	93 115	93 120	93 125	93 131	93 136	93 141
854	93 146	93 151	93 156	93 161	93 166	93 171	93 176	93 181	93 186	93 192
855	93 197	93 202	93 207	93 212	93 217	93 222	93 227	93 232	93 237	93 242
856	93 247	93 252	93 258	93 263	93 268	93 273	93 278	93 283	93 288	93 293
857	93 298	93 303	93 308	93 313	93 318	93 323	93 328	93 334	93 339	93 344
858	93 349	93 354	93 359	93 364	93 369	93 374	93 379	93 384	93 389	93 394
859	93 399	93 404	93 409	93 414	93 420	93 425	93 430	93 435	93 440	93 445
860	93 450	93 455	93 460	93 465	93 470	93 475	93 480	93 485	93 490	93 495
861	93 500	93 505	93 510	93 515	93 520	93 526	93 531	93 536	93 541	93 546
862	93 551	93 556	93 561	93 566	93 571	93 576	93 581	93 586	93 591	93 596
863	93 601	93 606	93 611	93 616	93 621	93 626	93 631	93 636	93 641	93 646
864	93 651	93 656	93 661	93 666	93 671	93 676	93 682	93 687	93 692	93 697
865	93 702	93 707	93 712	93 717	93 722	93 727	93 732	93 737	93 742	93 747
866	93 752	93 757	93 762	93 767	93 772	93 777	93 782	93 787	93 792	93 797
867	93 802	93 807	93 812	93 817	93 822	93 827	93 832	93 837	93 842	93 847
868	93 852	93 857	93 862	93 867	93 872	93 877	93 882	93 887	93 892	93 897
869	93 902	93 907	93 912	93 917	93 922	93 927	93 932	93 937	93 942	93 947
870	93 952	93 957	93 962	93 967	93 972	93 977	93 982	93 987	93 992	93 997
871	94 002	94 007	94 012	94 017	94 022	94 027	94 032	94 037	94 042	94 047
872	94 052	94 057	94 062	94 067	94 072	94 077	94 082	94 086	94 091	94 096
873	94 101	94 106	94 111	94 116	94 121	94 126	94 131	94 136	94 141	94 146
874	94 151	94 156	94 161	94 166	94 171	94 176	94 181	94 186	94 191	94 196
875	94 201	94 206	94 211	94 216	94 221	94 226	94 231	94 236	94 240	94 245
876	94 250	94 255	94 260	94 265	94 270	94 275	94 280	94 285	94 290	94 295
877	94 300	94 305	94 310	94 315	94 320	94 325	94 330	94 335	94 340	94 345
878	94 349	94 354	94 359	94 364	94 369	94 374	94 379	94 384	94 389	94 394
879	94 399	94 404	94 409	94 414	94 419	94 424	94 429	94 433	94 438	94 443
880	94 448	94 453	94 458	94 463	94 468	94 473	94 478	94 483	94 488	94 493
881	94 498	94 503	94 507	94 512	94 517	94 522	94 527	94 532	94 537	94 542
882	94 547	94 552	94 557	94 562	94 567	94 571	94 576	94 581	94 586	94 591
883	94 596	94 601	94 606	94 611	94 616	94 621	94 626	94 630	94 635	94 640
884	94 645	94 650	94 655	94 660	94 665	94 670	94 675	94 680	94 685	94 689
885	94 694	94 699	94 704	94 709	94 714	94 719	94 724	94 729	94 734	94 738
886	94 743	94 748	94 753	94 758	94 763	94 768	94 773	94 778	94 783	94 787
887	94 792	94 797	94 802	94 807	94 812	94 817	94 822	94 827	94 832	94 836
888	94 841	94 846	94 851	94 856	94 861	94 866	94 871	94 876	94 880	94 885
889	94 890	94 895	94 900	94 905	94 910	94 915	94 919	94 924	94 929	94 934
890	94 939	94 944	94 949	94 954	94 959	94 963	94 968	94 973	94 978	94 983
891	94 988	94 993	94 998	95 002	95 007	95 012	95 017	95 022	95 027	95 032
892	95 036	95 041	95 046	95 051	95 056	95 061	95 066	95 071	95 075	95 080
893	95 085	95 090	95 095	95 100	95 105	95 109	95 114	95 119	95 124	95 129
894	95 134	95 139	95 143	95 148	95 153	95 158	95 163	95 168	95 173	95 177
895	95 182	95 187	95 192	95 197	95 202	95 207	95 211	95 216	95 221	95 226
896	95 231	95 236	95 240	95 245	95 250	95 255	95 260	95 265	95 270	95 274
897	95 279	95 284	95 289	95 294	95 299	95 303	95 308	95 313	95 318	95 323
898	95 328	95 332	95 337	95 342	95 347	95 352	95 357	95 361	95 366	95 371
899	95 376	95 381	95 386	95 390	95 395	95 400	95 405	95 410	95 415	95 419
900	95 424	95 429	95 434	95 439	95 444	95 448	95 453	95 458	95 463	95 468
N	0	1	2	3	4	5	6	7	8	9

N	0	1	2	3	4	5	6	7	8	9
900	95 424	95 429	95 434	95 439	95 444	95 448	95 453	95 458	95 463	95 468
901	95 472	95 477	95 482	95 487	95 492	95 497	95 501	95 506	95 511	95 516
902	95 521	95 525	95 530	95 535	95 540	95 545	95 550	95 554	95 559	95 564
903	95 569	95 574	95 578	95 583	95 588	95 593	95 598	95 602	95 607	95 612
904	95 617	95 622	95 626	95 631	95 636	95 641	95 646	95 650	95 655	95 660
905	95 665	95 670	95 674	95 679	95 684	95 689	95 694	95 698	95 703	95 708
906	95 713	95 718	95 722	95 727	95 732	95 737	95 742	95 746	95 751	95 756
907	95 761	95 766	95 770	95 775	95 780	95 785	95 789	95 794	95 799	95 804
908	95 809	95 813	95 818	95 823	95 828	95 832	95 837	95 842	95 847	95 852
909	95 856	95 861	95 866	95 871	95 875	95 880	95 885	95 890	95 895	95 899
910	95 904	95 909	95 914	95 918	95 923	95 928	95 933	95 938	95 942	95 947
911	95 952	95 957	95 961	95 966	95 971	95 976	95 980	95 985	95 990	95 995
912	95 999	96 004	96 009	96 014	96 019	96 023	96 028	96 033	96 038	96 042
913	96 047	96 052	96 057	96 061	96 066	96 071	96 076	96 080	96 085	96 090
914	96 095	96 099	96 104	96 109	96 114	96 118	96 123	96 128	96 133	96 137
915	96 142	96 147	96 152	96 156	96 161	96 166	96 171	96 175	96 180	96 185
916	96 190	96 194	96 199	96 204	96 209	96 213	96 218	96 223	96 227	96 232
917	96 237	96 242	96 246	96 251	96 256	96 261	96 265	96 270	96 275	96 280
918	96 284	96 289	96 294	96 298	96 303	96 308	96 313	96 317	96 322	96 327
919	96 332	96 336	96 341	96 346	96 350	96 355	96 360	96 365	96 369	96 374
920	96 379	96 384	96 388	96 393	96 398	96 402	96 407	96 412	96 417	96 421
921	96 426	96 431	96 435	96 440	96 445	96 450	96 454	96 459	96 464	96 468
922	96 473	96 478	96 483	96 487	96 492	96 497	96 501	96 506	96 511	96 515
923	96 520	96 525	96 530	96 534	96 539	96 544	96 548	96 553	96 558	96 562
924	96 567	96 572	96 577	96 581	96 586	96 591	96 595	96 600	96 605	96 609
925	96 614	96 619	96 624	96 628	96 633	96 638	96 642	96 647	96 652	96 656
926	96 661	96 666	96 670	96 675	96 680	96 685	96 689	96 694	96 699	96 703
927	96 708	96 713	96 717	96 722	96 727	96 731	96 736	96 741	96 745	96 750
928	96 755	96 759	96 764	96 769	96 774	96 778	96 783	96 788	96 792	96 797
929	96 802	96 806	96 811	96 816	96 820	96 825	96 830	96 834	96 839	96 844
930	96 848	96 853	96 858	96 862	96 867	96 872	96 876	96 881	96 886	96 890
931	96 895	96 900	96 904	96 909	96 914	96 918	96 923	96 928	96 932	96 937
932	96 942	96 946	96 951	96 956	96 960	96 965	96 970	96 974	96 979	96 984
933	96 988	96 993	96 997	97 002	97 007	97 011	97 016	97 021	97 025	97 030
934	97 035	97 039	97 044	97 049	97 053	97 058	97 063	97 067	97 072	97 077
935	97 081	97 086	97 090	97 095	97 100	97 104	97 109	97 114	97 118	97 123
936	97 128	97 132	97 137	97 142	97 146	97 151	97 155	97 160	97 165	97 169
937	97 174	97 179	97 183	97 188	97 192	97 197	97 202	97 206	97 211	97 216
938	97 220	97 225	97 230	97 234	97 239	97 243	97 248	97 253	97 257	97 262
939	97 267	97 271	97 276	97 280	97 285	97 290	97 294	97 299	97 304	97 308
940	97 313	97 317	97 322	97 327	97 331	97 336	97 340	97 345	97 350	97 354
941	97 359	97 364	97 368	97 373	97 377	97 382	97 387	97 391	97 396	97 400
942	97 405	97 410	97 414	97 419	97 424	97 428	97 433	97 437	97 442	97 447
943	97 451	97 456	97 460	97 465	97 470	97 474	97 479	97 483	97 488	97 493
944	97 497	97 502	97 506	97 511	97 516	97 520	97 525	97 529	97 534	97 539
945	97 543	97 548	97 552	97 557	97 562	97 566	97 571	97 575	97 580	97 585
946	97 589	97 594	97 598	97 603	97 607	97 612	97 617	97 621	97 626	97 630
947	97 635	97 640	97 644	97 649	97 653	97 658	97 663	97 667	97 672	97 676
948	97 681	97 685	97 690	97 695	97 699	97 704	97 708	97 713	97 717	97 722
949	97 727	97 731	97 736	97 740	97 745	97 749	97 754	97 759	97 763	97 768
950	97 772	97 777	97 782	97 786	97 791	97 795	97 800	97 804	97 809	97 813
N	0	1	2	3	4	5	6	7	8	9

N	0	1	2	3	4	5	6	7	8	9
950	97 772	97 777	97 782	97 786	97 791	97 795	97 800	97 804	97 809	97 813
951	97 818	97 823	97 827	97 832	97 836	97 841	97 845	97 850	97 855	97 859
952	97 864	97 868	97 873	97 877	97 882	97 886	97 891	97 896	97 900	97 905
953	97 909	97 914	97 918	97 923	97 928	97 932	97 937	97 941	97 946	97 950
954	97 955	97 959	97 964	97 968	97 973	97 978	97 982	97 987	97 991	97 996
955	98 000	98 005	98 009	98 014	98 019	98 023	98 028	98 032	98 037	98 041
956	98 046	98 050	98 055	98 059	98 064	98 068	98 073	98 078	98 082	98 087
957	98 091	98 096	98 100	98 105	98 109	98 114	98 118	98 123	98 127	98 132
958	98 137	98 141	98 146	98 150	98 155	98 159	98 164	98 168	98 173	98 177
959	98 182	98 186	98 191	98 195	98 200	98 204	98 209	98 214	98 218	98 223
960	98 227	98 232	98 236	98 241	98 245	98 250	98 254	98 259	98 263	98 268
961	98 272	98 277	98 281	98 286	98 290	98 295	98 299	98 304	98 308	98 313
962	98 318	98 322	98 327	98 331	98 336	98 340	98 345	98 349	98 354	98 358
963	98 363	98 367	98 372	98 376	98 381	98 385	98 390	98 394	98 399	98 403
964	98 408	98 412	98 417	98 421	98 426	98 430	98 435	98 439	98 444	98 448
965	98 453	98 457	98 462	98 466	98 471	98 475	98 480	98 484	98 489	98 493
966	98 498	98 502	98 507	98 511	98 516	98 520	98 525	98 529	98 534	98 538
967	98 543	98 547	98 552	98 556	98 561	98 565	98 570	98 574	98 579	98 583
968	98 588	98 592	98 597	98 601	98 605	98 610	98 614	98 619	98 623	98 628
969	98 632	98 637	98 641	98 646	98 650	98 655	98 659	98 664	98 668	98 673
970	98 677	98 682	98 686	98 691	98 695	98 700	98 704	98 709	98 713	98 717
971	98 722	98 726	98 731	98 735	98 740	98 744	98 749	98 753	98 758	98 762
972	98 767	98 771	98 776	98 780	98 784	98 789	98 793	98 798	98 802	98 807
973	98 811	98 816	98 820	98 825	98 829	98 834	98 838	98 843	98 847	98 851
974	98 856	98 860	98 865	98 869	98 874	98 878	98 883	98 887	98 892	98 896
975	98 900	98 905	98 909	98 914	98 918	98 923	98 927	98 932	98 936	98 941
976	98 945	98 949	98 954	98 958	98 963	98 967	98 972	98 976	98 981	98 985
977	98 989	98 994	98 998	99 003	99 007	99 012	99 016	99 021	99 025	99 029
978	99 034	99 038	99 043	99 047	99 052	99 056	99 061	99 065	99 069	99 074
979	99 078	99 083	99 087	99 092	99 096	99 100	99 105	99 109	99 114	99 118
980	99 123	99 127	99 131	99 136	99 140	99 145	99 149	99 154	99 158	99 162
981	99 167	99 171	99 176	99 180	99 185	99 189	99 193	99 198	99 202	99 207
982	99 211	99 216	99 220	99 224	99 229	99 233	99 238	99 242	99 247	99 251
983	99 255	99 260	99 264	99 269	99 273	99 277	99 282	99 286	99 291	99 295
984	99 300	99 304	99 308	99 313	99 317	99 322	99 326	99 330	99 335	99 339
985	99 344	99 348	99 352	99 357	99 361	99 366	99 370	99 374	99 379	99 383
986	99 388	99 392	99 396	99 401	99 405	99 410	99 414	99 419	99 423	99 427
987	99 432	99 436	99 441	99 445	99 449	99 454	99 458	99 463	99 467	99 471
988	99 476	99 480	99 484	99 489	99 493	99 498	99 502	99 506	99 511	99 515
989	99 520	99 524	99 528	99 533	99 537	99 542	99 546	99 550	99 555	99 559
990	99 564	99 568	99 572	99 577	99 581	99 585	99 590	99 594	99 599	99 603
991	99 607	99 612	99 616	99 621	99 625	99 629	99 634	99 638	99 642	99 647
992	99 651	99 656	99 660	99 664	99 669	99 673	99 677	99 682	99 686	99 691
993	99 695	99 699	99 704	99 708	99 712	99 717	99 721	99 726	99 730	99 734
994	99 739	99 743	99 747	99 752	99 756	99 760	99 765	99 769	99 774	99 778
995	99 782	99 787	99 791	99 795	99 800	99 804	99 808	99 813	99 817	99 822
996	99 826	99 830	99 835	99 839	99 843	99 848	99 852	99 856	99 861	99 865
997	99 870	99 874	99 878	99 883	99 887	99 891	99 896	99 900	99 904	99 909
998	99 913	99 917	99 922	99 926	99 930	99 935	99 939	99 944	99 948	99 952
999	99 957	99 961	99 965	99 970	99 974	99 978	99 983	99 987	99 991	99 996
1000	00 000	00 004	00 009	00 013	00 017	00 022	00 026	00 030	00 035	00 039
N	0	1	2	3	4	5	6	7		

TABLE II.—LOGARITHMS OF CONSTANTS.

		log
Circumference of the Circle in degrees .... =	360	2. 55 630 250
Circumference of the Circle in minutes .... =	21 600	4. 33 445 375
Circumference of the Circle in seconds .... = 1 296 000		6. 11 260 500

If the radius $r = 1$, half the Circumference of the Circle is

$\pi = 3.\,14\,159\,265\,358\,979\,323\,846\,264\,338\,328 \ldots \ldots \ldots \ldots$ 0. 49 714 987

Also:	log			log
$2\pi =$ 6. 28 318 531	0. 79 817 987	π^2	$= 9.\,86\,960\,440$	0. 99 429 975
$4\pi =$ 12. 56 637 061	1. 09 920 986	$\dfrac{1}{\pi^2}$	$= 0.\,10\,132\,118$	9. 00 570 025 — 10
$\dfrac{\pi}{2} =$ 1. 57 079 633	0. 19 611 988			
$\dfrac{\pi}{3} =$ 1. 04 719 755	0. 02 002 862	$\sqrt{\pi}$	$= 1.\,77\,245\,385$	0. 24 857 494
$\dfrac{4\pi}{3} =$ 4. 18 879 020	0. 62 208 861	$\dfrac{1}{\sqrt{\pi}}$	$= 0.\,56\,418\,958$	9. 75 142 506 — 10
$\dfrac{\pi}{4} =$ 0. 78 539 816	9. 89 508 988 — 10	$\sqrt{\dfrac{3}{\pi}}$	$= 0.\,97\,720\,502$	9. 98 998 569 — 10
$\dfrac{\pi}{6} =$ 0. 52 359 878	9. 71 899 862 — 10	$\sqrt{\dfrac{4}{\pi}}$	$= 1.\,12\,837\,917$	0. 05 245 506
$\dfrac{1}{\pi} =$ 0. 31 830 989	9. 50 285 013 — 10	$\sqrt[3]{\pi}$	$= 1.\,46\,459\,189$	0. 16 571 662
$\dfrac{1}{2\pi} =$ 0. 15 915 494	9. 20 182 013 — 10	$\dfrac{1}{\sqrt[3]{\pi}}$	$= 0.\,68\,278\,406$	9. 83 428 338 — 10
$\dfrac{3}{\pi} =$ 0. 95 492 966	9. 97 997 138 — 10	$\sqrt[3]{\pi^2}$	$= 2.\,14\,502\,940$	0. 33 143 325
$\dfrac{4}{\pi} =$ 1. 27 323 954	0. 10 491 012	$\sqrt[3]{\dfrac{3}{4\pi}}$	$= 0.\,62\,035\,049$	9. 79 263 713 — 10
$\dfrac{3}{4\pi} =$ 0. 23 873 241	9. 37 791 139 — 10	$\sqrt[3]{\dfrac{\pi}{6}}$	$= 0.\,80\,599\,598$	9. 90 633 287 — 10

Arc a, whose length is equal to the radius r, is:

	log
in degrees .....$a°$ ..... $= \dfrac{180}{\pi}$ .... $= 57.\,29\,577\,951°$.	1. 75 812 263
in minutes .....a' ..... $= \dfrac{10\,800}{\pi}$ ...... $= 3\,437.\,74\,677'$ ..	3. 53 627 388
in seconds .....a'' ..... $= \dfrac{648\,000}{\pi}$ ..... $= 206\,264.\,806''$ ..	5. 31 442 513

Arc $2a$, whose length is equal to twice the radius, $2r$, is:

in degrees .....$2a°$ .... $= \dfrac{360}{\pi}$ .... $= 114.\,59\,155\,903°$	2. 05 915 263
in minutes .....$2a'$ .... $= \dfrac{21\,600}{\pi}$ ...... $= 6\,875.\,49\,354'$ ..	3. 83 730 388
in seconds .....$2a''$ .... $= \dfrac{1\,296\,000}{\pi}$ .... $= 412\,529.\,612''$ ..	5. 61 545 513

If the radius $r = 1$, the length of the arc is:

for 1 degree .... $\dfrac{1}{a°}$ .... $= \dfrac{\pi}{180}$ .... $= 0.\,01\,745\,329\ldots$	8. 24 187 737 — 10
for 1 minute.... $\dfrac{1}{a'}$ .... $= \dfrac{\pi}{10\,800}$ ...... $= 0.\,00\,029\,089\ldots$	6. 46 372 612 — 10
for 1 second.... $\dfrac{1}{a''}$ .... $= \dfrac{\pi}{648\,000}$ ..... $= 0.\,00\,000\,485\ldots$	4. 68 557 487 — 10
for $\frac{1}{2}$ degree .... $\dfrac{1}{2a°}$ .... $= \dfrac{\pi}{360}$ .... $= 0.\,00\,872\,665\ldots$	7. 94 084 737 — 10
for $\frac{1}{2}$ minute.... $\dfrac{1}{2a'}$ .... $= \dfrac{\pi}{21\,600}$ ...... $= 0.\,00\,014\,544\ldots$	6. 16 269 612 — 10
for $\frac{1}{2}$ second.... $\dfrac{1}{2a''}$ .... $= \dfrac{\pi}{1\,296\,000}$ .... $= 0.\,00\,000\,242\ldots$	4. 38 454 487 — 10
Sin $1''$ in the unit circle .... $= 0.\,00\,000\,485\ldots$	4. 68 557 487 — 10

TABLE III.

—◆—

THE LOGARITHMS

OF THE

TRIGONOMETRIC FUNCTIONS:

From 0° to 0° 3', or 89° 57' to 90°, for every second;
From 0° to 2°, or 88° to 90°, for every ten seconds;
From 1° to 89°, for every minute.

NOTE. To all the logarithms —10 is to be appended.

| log sin | | | 0° | | log tan = log sin | | | |
| | | | | | log cos = 10. 00 000 | | | |

''	0'	1'	2'	''	''	0'	1'	2'	''
0	—	6. 46 373	6. 76 476	60	30	6. 16 270	6. 63 982	6. 86 167	30
1	4. 68 557	6. 47 090	6. 76 836	59	31	6. 17 694	6. 64 462	6. 86 455	29
2	4. 98 660	6. 47 797	6. 77 193	58	32	6. 19 072	6. 64 936	6. 86 742	28
3	5. 16 270	6. 48 492	6. 77 548	57	33	6. 20 409	6. 65 406	6. 87 027	27
4	5. 28 763	6. 49 175	6. 77 900	56	34	6. 21 705	6. 65 870	6. 87 310	26
5	5. 38 454	6. 49 849	6. 78 248	55	35	6. 22 964	6. 66 330	6. 87 591	25
6	5. 46 373	6. 50 512	6. 78 595	54	36	6. 24 188	6. 66 785	6. 87 870	24
7	5. 53 067	6. 51 165	6. 78 938	53	37	6. 25 378	6. 67 235	6. 88 147	23
8	5. 58 866	6. 51 808	6. 79 278	52	38	6. 26 536	6. 67 680	6. 88 423	22
9	5. 63 982	6. 52 442	6. 79 616	51	39	6. 27 664	6. 68 121	6. 88 697	21
10	5. 68 557	6. 53 067	6. 79 952	50	40	6. 28 763	6. 68 557	6. 88 969	20
11	5. 72 697	6. 53 683	6. 80 285	49	41	6. 29 836	6. 68 990	6. 89 240	19
12	5. 76 476	6. 54 291	6. 80 615	48	42	6. 30 882	6. 69 418	6. 89 509	18
13	5. 79 952	6. 54 890	6. 80 943	47	43	6. 31 904	6. 69 841	6. 89 776	17
14	5. 83 170	6. 55 481	6. 81 268	46	44	6. 32 903	6. 70 261	6. 90 042	16
15	5. 86 167	6. 56 064	6. 81 591	45	45	6. 33 879	6. 70 676	6. 90 306	15
16	5. 88 969	6. 56 639	6. 81 911	44	46	6. 34 833	6. 71 088	6. 90 568	14
17	5. 91 602	6. 57 207	6. 82 230	43	47	6. 35 767	6. 71 496	6. 90 829	13
18	5. 94 085	6. 57 767	6. 82 545	42	48	6. 36 682	6. 71 900	6. 91 088	12
19	5. 96 433	6. 58 320	6. 82 859	41	49	6. 37 577	6. 72 300	6. 91 346	11
20	5. 98 660	6. 58 866	6. 83 170	40	50	6. 38 454	6. 72 697	6. 91 602	10
21	6. 00 779	6. 59 406	6. 83 479	39	51	6. 39 315	6. 73 090	6. 91 857	9
22	6. 02 800	6. 59 939	6. 83 786	38	52	6. 40 158	6. 73 479	6. 92 110	8
23	6. 04 730	6. 60 465	6. 84 091	37	53	6. 40 985	6. 73 865	6. 92 362	7
24	6. 06 579	6. 60 985	6. 84 394	36	54	6. 41 797	6. 74 248	6. 92 612	6
25	6. 08 351	6. 61 499	6. 84 694	35	55	6. 42 594	6. 74 627	6. 92 861	5
26	6. 10 055	6. 62 007	6. 84 993	34	56	6. 43 376	6. 75 003	6. 93 109	4
27	6. 11 694	6. 62 509	6. 85 289	33	57	6. 44 145	6. 75 376	6. 93 355	3
28	6. 13 273	6. 63 006	6. 85 584	32	58	6. 44 900	6. 75 746	6. 93 599	2
29	6. 14 797	6. 63 496	6. 85 876	31	59	6. 45 643	6. 76 112	6. 93 843	1
30	6. 16 270	6. 63 982	6. 86 167	30	60	6. 46 373	6. 76 476	6. 94 085	0
''	59'	58'	57'	''	''	59'	58'	57'	''

log cot = log cos
log sin = 10. 00 000

89°

log cos

′ ″	log sin	log tan	log cos	″ ′	′ ″	log sin	log tan	log cos	″ ′
0 0	—	—	10.00000	**0 60**	**10 0**	7.46 373	7.46 373	10.00000	**0 50**
10	5.68 557	5.68 557	10.00000	50	10	7.47 090	7.47 091	10.00000	50
20	5.98 660	5.98 660	10.00000	40	20	7.47 797	7.47 797	10.00000	40
30	6.16 270	6.16 270	10.00000	30	30	7.48 491	7.48 492	10.00000	30
40	6.28 763	6.28 763	10.00000	20	40	7.49 175	7.49 176	10.00000	20
50	6.38 454	6.38 454	10.00000	10	50	7.49 849	7.49 849	10.00000	10
1 0	6.46 373	6.46 373	10.00000	**0 59**	**11 0**	7.50 512	7.50 512	10.00000	**0 49**
10	6.53 067	6.53 067	10.00000	50	10	7.51 165	7.51 165	10.00000	50
20	6.58 866	6.58 866	10.00000	40	20	7.51 808	7.51 809	10.00000	40
30	6.63 982	6.63 982	10.00000	30	30	7.52 442	7.52 443	10.00000	30
40	6.68 557	6.68 557	10.00000	20	40	7.53 067	7.53 067	10.00000	20
50	6.72 697	6.72 697	10.00000	10	50	7.53 683	7.53 683	10.00000	10
2 0	6.76 476	6.76 476	10.00000	**0 58**	**12 0**	7.54 291	7.54 291	10.00000	**0 48**
10	6.79 952	6.79 952	10.00000	50	10	7.54 890	7.54 890	10.00000	50
20	6.83 170	6.83 170	10.00000	40	20	7.55 481	7.55 481	10.00000	40
30	6.86 167	6.86 167	10.00000	30	30	7.56 064	7.56 064	10.00000	30
40	6.88 969	6.88 969	10.00000	20	40	7.56 639	7.56 639	10.00000	20
50	6.91 602	6.91 602	10.00000	10	50	7.57 206	7.57 207	10.00000	10
3 0	6.94 085	6.94 085	10.00000	**0 57**	**13 0**	7.57 767	7.57 767	10.00000	**0 47**
10	6.96 433	6.96 433	10.00000	50	10	7.58 320	7.58 320	10.00000	50
20	6.98 660	6.98 661	10.00000	40	20	7.58 866	7.58 867	10.00000	40
30	7.00 779	7.00 779	10.00000	30	30	7.59 406	7.59 406	10.00000	30
40	7.02 800	7.02 800	10.00000	20	40	7.59 939	7.59 939	10.00000	20
50	7.04 730	7.04 730	10.00000	10	50	7.60 465	7.60 466	10.00000	10
4 0	7.06 579	7.06 579	10.00000	**0 56**	**14 0**	7.60 985	7.60 986	10.00000	**0 46**
10	7.08 351	7.08 352	10.00000	50	10	7.61 499	7.61 500	10.00000	50
20	7.10 055	7.10 055	10.00000	40	20	7.62 007	7.62 008	10.00000	40
30	7.11 694	7.11 694	10.00000	30	30	7.62 509	7.62 510	10.00000	30
40	7.13 273	7.13 273	10.00000	20	40	7.63 006	7.63 006	10.00000	20
50	7.14 797	7.14 797	10.00000	10	50	7.63 496	7.63 497	10.00000	10
5 0	7.16 270	7.16 270	10.00000	**0 55**	**15 0**	7.63 982	7.63 982	10.00000	**0 45**
10	7.17 694	7.17 694	10.00000	50	10	7.64 461	7.64 462	10.00000	50
20	7.19 072	7.19 073	10.00000	40	20	7.64 936	7.64 937	10.00000	40
30	7.20 409	7.20 409	10.00000	30	30	7.65 406	7.65 406	10.00000	30
40	7.21 705	7.21 705	10.00000	20	40	7.65 870	7.65 871	10.00000	20
50	7.22 964	7.22 964	10.00000	10	50	7.66 330	7.66 330	10.00000	10
6 0	7.24 188	7.24 188	10.00000	**0 54**	**16 0**	7.66 784	7.66 785	10.00000	**0 44**
10	7.25 378	7.25 378	10.00000	50	10	7.67 235	7.67 235	10.00000	50
20	7.26 536	7.26 536	10.00000	40	20	7.67 680	7.67 680	10.00000	40
30	7.27 664	7.27 664	10.00000	30	30	7.68 121	7.68 121	10.00000	30
40	7.28 763	7.28 764	10.00000	20	40	7.68 557	7.68 558	9.99999	20
50	7.29 836	7.29 836	10.00000	10	50	7.68 989	7.68 990	9.99999	10
7 0	7.30 882	7.30 882	10.00000	**0 53**	**17 0**	7.69 417	7.69 418	9.99 999	**0 43**
10	7.31 904	7.31 904	10.00000	50	10	7.69 841	7.69 842	9.99 999	50
20	7.32 903	7.32 903	10.00000	40	20	7.70 261	7.70 261	9.99 999	40
30	7.33 879	7.33 879	10.00000	30	30	7.70 677	7.70 677	9.99 999	30
40	7.34 833	7.34 833	10.00000	20	40	7.71 088	7.71 088	9.99 999	20
50	7.35 767	7.35 767	10.00000	10	50	7.71 496	7.71 496	9.99 999	10
8 0	7.36 682	7.36 682	10.00000	**0 52**	**18 0**	7.71 900	7.71 900	9.99 999	**0 42**
10	7.37 577	7.37 577	10.00000	50	10	7.72 300	7.72 301	9.99 999	50
20	7.38 454	7.38 455	10.00000	40	20	7.72 697	7.72 697	9.99 999	40
30	7.39 314	7.39 315	10.00000	30	30	7.73 090	7.73 090	9.99 999	30
40	7.40 158	7.40 158	10.00000	20	40	7.73 479	7.73 480	9.99 999	20
50	7.40 985	7.40 985	10.00000	10	50	7.73 865	7.73 866	9.99 999	10
9 0	7.41 797	7.41 797	10.00000	**0 51**	**19 0**	7.74 248	7.74 248	9.99 999	**0 41**
10	7.42 594	7.42 594	10.00000	50	10	7.74 627	7.74 628	9.99 999	50
20	7.43 376	7.43 376	10.00000	40	20	7.75 003	7.75 004	9.99 999	40
30	7.44 145	7.44 145	10.00000	30	30	7.75 376	7.75 377	9.99 999	30
40	7.44 900	7.44 900	10.00000	20	40	7.75 745	7.75 746	9.99 999	20
50	7.45 643	7.45 643	10.00000	10	50	7.76 112	7.76 113	9.99 999	10
10 0	7.46 373	7.46 373	10.00000	**0 50**	**20 0**	7.76 475	7.76 476	9.99 999	**0 40**
′ ″	log cos	log cot	log sin	″ ′	′ ″	log cos	log cot	log sin	″ ′

′ ″	log sin	log tan	log cos	″ ′	′ ″	log sin	log tan	log cos	″ ′
20 0	7.76 475	7.76 476	9.99 999	**0 40**	**30** 0	7.94 084	7.94 086	9.99 998	**0 30**
10	7.76 836	7.76 837	9.99 999	50	10	7.94 325	7.94 326	9.99 998	50
20	7.77 193	7.77 194	9.99 999	40	20	7.94 564	7.94 566	9.99 998	40
30	7.77 548	7.77 549	9.99 999	30	30	7.94 802	7.94 804	9.99 998	30
40	7.77 899	7.77 900	9.99 999	20	40	7.95 039	7.95 040	9.99 998	20
50	7.78 248	7.78 249	9.99 999	10	50	7.95 274	7.95 276	9.99 998	10
21 0	7.78 594	7.78 595	9.99 999	**0 39**	**31** 0	7.95 508	7.95 510	9.99 998	**0 29**
10	7.78 938	7.78 938	9.99 999	50	10	7.95 741	7.95 743	9.99 998	50
20	7.79 278	7.79 279	9.99 999	40	20	7.95 973	7.95 974	9.99 998	40
30	7.79 616	7.79 617	9.99 999	30	30	7.96 203	7.96 205	9.99 998	30
40	7.79 952	7.79 952	9.99 999	20	40	7.96 432	7.96 434	9.99 998	20
50	7.80 284	7.80 285	9.99 999	10	50	7.96 660	7.96 662	9.99 998	10
22 0	7.80 615	7.80 615	9.99 999	**0 38**	**32** 0	7.96 887	7.96 889	9.99 998	**0 28**
10	7.80 942	7.80 943	9.99 999	50	10	7.97 113	7.97 114	9.99 998	50
20	7.81 268	7.81 269	9.99 999	40	20	7.97 337	7.97 339	9.99 998	40
30	7.81 591	7.81 591	9.99 999	30	30	7.97 560	7.97 562	9.99 998	30
40	7.81 911	7.81 912	9.99 999	20	40	7.97 782	7.97 784	9.99 998	20
50	7.82 229	7.82 230	9.99 999	10	50	7.98 003	7.98 005	9.99 998	10
23 0	7.82 545	7.82 546	9.99 999	**0 37**	**33** 0	7.98 223	7.98 225	9.99 998	**0 27**
10	7.82 859	7.82 860	9.99 999	50	10	7.98 442	7.98 444	9.99 998	50
20	7.83 170	7.83 171	9.99 999	40	20	7.98 660	7.98 662	9.99 998	40
30	7.83 479	7.83 480	9.99 999	30	30	7.98 876	7.98 878	9.99 998	30
40	7.83 786	7.83 787	9.99 999	20	40	7.99 092	7.99 094	9.99 998	20
50	7.84 091	7.84 092	9.99 999	10	50	7.99 306	7.99 308	9.99 998	10
24 0	7.84 393	7.84 394	9.99 999	**0 36**	**34** 0	7.99 520	7.99 522	9.99 998	**0 26**
10	7.84 694	7.84 695	9.99 999	50	10	7.99 732	7.99 734	9.99 998	50
20	7.84 992	7.84 994	9.99 999	40	20	7.99 943	7.99 946	9.99 998	40
30	7.85 289	7.85 290	9.99 999	30	30	8.00 154	8.00 156	9.99 998	30
40	7.85 583	7.85 584	9.99 999	20	40	8.00 363	8.00 365	9.99 998	20
50	7.85 876	7.85 877	9.99 999	10	50	8.00 571	8.00 574	9.99 998	10
25 0	7.86 166	7.86 167	9.99 999	**0 35**	**35** 0	8.00 779	8.00 781	9.99 998	**0 25**
10	7.86 455	7.86 456	9.99 999	50	10	8.00 985	8.00 987	9.99 998	50
20	7.86 741	7.86 743	9.99 999	40	20	8.01 190	8.01 193	9.99 998	40
30	7.87 026	7.87 027	9.99 999	30	30	8.01 395	8.01 397	9.99 998	30
40	7.87 309	7.87 310	9.99 999	20	40	8.01 598	8.01 600	9.99 998	20
50	7.87 590	7.87 591	9.99 999	10	50	8.01 801	8.01 803	9.99 998	10
26 0	7.87 870	7.87 871	9.99 999	**0 34**	**36** 0	8.02 002	8.02 004	9.99 998	**0 24**
10	7.88 147	7.88 148	9.99 999	50	10	8.02 203	8.02 205	9.99 998	50
20	7.88 423	7.88 424	9.99 999	40	20	8.02 402	8.02 405	9.99 998	40
30	7.88 697	7.88 698	9.99 999	30	30	8.02 601	8.02 604	9.99 998	30
40	7.88 969	7.88 970	9.99 999	20	40	8.02 799	8.02 801	9.99 998	20
50	7.89 240	7.89 241	9.99 999	10	50	8.02 996	8.02 998	9.99 998	10
27 0	7.89 509	7.89 510	9.99 999	**0 33**	**37** 0	8.03 192	8.03 194	9.99 997	**0 23**
10	7.89 776	7.89 777	9.99 999	50	10	8.03 387	8.03 390	9.99 997	50
20	7.90 041	7.90 043	9.99 999	40	20	8.03 581	8.03 584	9.99 997	40
30	7.90 305	7.90 307	9.99 999	30	30	8.03 775	8.03 777	9.99 997	30
40	7.90 568	7.90 569	9.99 999	20	40	8.03 967	8.03 970	9.99 997	20
50	7.90 829	7.90 830	9.99 999	10	50	8.04 159	8.04 162	9.99 997	10
28 0	7.91 088	7.91 089	9.99 999	**0 32**	**38** 0	8.04 350	8.04 353	9.99 997	**0 22**
10	7.91 346	7.91 347	9.99 999	50	10	8.04 540	8.04 543	9.99 997	50
20	7.91 602	7.91 603	9.99 999	40	20	8.04 729	8.04 732	9.99 997	40
30	7.91 857	7.91 858	9.99 999	30	30	8.04 918	8.04 921	9.99 997	30
40	7.92 110	7.92 111	9.99 998	20	40	8.05 105	8.05 108	9.99 997	20
50	7.92 362	7.92 363	9.99 998	10	50	8.05 292	8.05 295	9.99 997	10
29 0	7.92 612	7.92 613	9.99 998	**0 31**	**39** 0	8.05 478	8.05 481	9.99 997	**0 21**
10	7.92 861	7.92 862	9.99 998	50	10	8.05 663	8.05 666	9.99 997	50
20	7.93 108	7.93 110	9.99 998	40	20	8.05 848	8.05 851	9.99 997	40
30	7.93 354	7.93 356	9.99 998	30	30	8.06 031	8.06 034	9.99 997	30
40	7.93 599	7.93 601	9.99 998	20	40	8.06 214	8.06 217	9.99 997	20
50	7.93 842	7.93 844	9.99 998	10	50	8.06 396	8.06 399	9.99 997	10
30 0	7.94 084	7.94 086	9.99 998	**0 30**	**40** 0	8.06 578	8.06 581	9.99 997	**0 20**
′ ″	log cos	log cot	log sin	″ ′	′ ″	log cos	log cot	log sin	″ ′

′ ″	log sin	log tan	log cos	″ ′	′ ″	log sin	log tan	log cos	″ ′
40 0	8.06 578	8.06 581	9.99 997	**0 20**	**50** 0	8.16 268	8.16 273	9.99 995	**0 10**
10	8.06 758	8.06 761	9.99 997	50	10	8.16 413	8.16 417	9.99 995	50
20	8.06 938	8.06 941	9.99 997	40	20	8.16 557	8.16 561	9.99 995	40
30	8.07 117	8.07 120	9.99 997	30	30	8.16 700	8.16 705	9.99 995	30
40	8.07 295	8.07 299	9.99 997	20	40	8.16 843	8.16 848	9.99 995	20
50	8.07 473	8.07 476	9.99 997	10	50	8.16 986	8.16 991	9.99 995	10
41 0	8.07 650	8.07 653	9.99 997	**0 19**	**51** 0	8.17 128	8.17 133	9.99 995	**0 9**
10	8.07 826	8.07 829	9.99 997	50	10	8.17 270	8.17 275	9.99 995	50
20	8.08 002	8.08 005	9.99 997	40	20	8.17 411	8.17 416	9.99 995	40
30	8.08 176	8.08 180	9.99 997	30	30	8.17 552	8.17 557	9.99 995	30
40	8.08 350	8.08 354	9.99 997	20	40	8.17 692	8.17 697	9.99 995	20
50	8.08 524	8.08 527	9.99 997	10	50	8.17 832	8.17 837	9.99 995	10
42 0	8.08 696	8.08 700	9.99 997	**0 18**	**52** 0	8.17 971	8.17 976	9.99 995	**0 8**
10	8.08 868	8.08 872	9.99 997	50	10	8.18 110	8.18 115	9.99 995	50
20	8.09 040	8.09 043	9.99 997	40	20	8.18 249	8.18 254	9.99 995	40
30	8.09 210	8.09 214	9.99 997	30	30	8.18 387	8.18 392	9.99 995	30
40	8.09 380	8.09 384	9.99 997	20	40	8.18 524	8.18 530	9.99 995	20
50	8.09 550	8.09 553	9.99 997	10	50	8.18 662	8.18 667	9.99 995	10
43 0	8.09 718	8.09 722	9.99 997	**0 17**	**53** 0	8.18 798	8.18 804	9.99 995	**0 7**
10	8.09 886	8.09 890	9.99 997	50	10	8.18 935	8.18 940	9.99 995	50
20	8.10 054	8.10 057	9.99 997	40	20	8.19 071	8.19 076	9.99 995	40
30	8.10 220	8.10 224	9.99 997	30	30	8.19 206	8.19 212	9.99 995	30
40	8.10 386	8.10 390	9.99 997	20	40	8.19 341	8.19 347	9.99 995	20
50	8.10 552	8.10 555	9.99 996	10	50	8.19 476	8.19 481	9.99 995	10
44 0	8.10 717	8.10 720	9.99 996	**0 16**	**54** 0	8.19 610	8.19 616	9.99 995	**0 6**
10	8.10 881	8.10 884	9.99 996	50	10	8.19 744	8.19 749	9.99 995	50
20	8.11 044	8.11 048	9.99 996	40	20	8.19 877	8.19 883	9.99 995	40
30	8.11 207	8.11 211	9.99 996	30	30	8.20 010	8.20 016	9.99 995	30
40	8.11 370	8.11 373	9.99 996	20	40	8.20 143	8.20 149	9.99 995	20
50	8.11 531	8.11 535	9.99 996	10	50	8.20 275	8.20 281	9.99 994	10
45 0	8.11 693	8.11 696	9.99 996	**0 15**	**55** 0	8.20 407	8.20 413	9.99 994	**0 5**
10	8.11 853	8.11 857	9.99 996	50	10	8.20 538	8.20 544	9.99 994	50
20	8.12 013	8.12 017	9.99 996	40	20	8.20 669	8.20 675	9.99 994	40
30	8.12 172	8.12 176	9.99 996	30	30	8.20 800	8.20 806	9.99 994	30
40	8.12 331	8.12 335	9.99 996	20	40	8.20 930	8.20 936	9.99 994	20
50	8.12 489	8.12 493	9.99 996	10	50	8.21 060	8.21 066	9.99 994	10
46 0	8.12 647	8.12 651	9.99 996	**0 14**	**56** 0	8.21 189	8.21 195	9.99 994	**0 4**
10	8.12 804	8.12 808	9.99 996	50	10	8.21 319	8.21 324	9.99 994	50
20	8.12 961	8.12 965	9.99 996	40	20	8.21 447	8.21 453	9.99 994	40
30	8.13 117	8.13 121	9.99 996	30	30	8.21 576	8.21 581	9.99 994	30
40	8.13 272	8.13 276	9.99 996	20	40	8.21 703	8.21 709	9.99 944	20
50	8.13 427	8.13 431	9.99 996	10	50	8.21 831	8.21 837	9.99 994	10
47 0	8.13 581	8.13 585	9.99 996	**0 13**	**57** 0	8.21 958	8.21 964	9.99 994	**0 3**
10	8.13 735	8.13 739	9.99 996	50	10	8.22 085	8.22 091	9.99 994	50
20	8.13 888	8.13 892	9.99 996	40	20	8.22 211	8.22 217	9.99 994	40
30	8.14 041	8.14 045	9.99 996	30	30	8.22 337	8.22 343	9.99 994	30
40	8.14 193	8.14 197	9.99 996	20	40	8.22 463	8.22 469	9.99 994	20
50	8.14 344	8.14 348	9.99 996	10	50	8.22 588	8.22 595	9.99 994	10
48 0	8.14 495	8.14 500	9.99 996	**0 12**	**58** 0	8.22 713	8.22 720	9.99 994	**0 2**
10	8.14 646	8.14 650	9.99 996	50	10	8.22 838	8.22 844	9.99 994	50
20	8.14 796	8.14 800	9.99 996	40	20	8.22 962	8.22 968	9.99 994	40
30	8.14 945	8.14 950	9.99 996	30	30	8.23 086	8.23 092	9.99 994	30
40	8.15 094	8.15 099	9.99 996	20	40	8.23 210	8.23 216	9.99 994	20
50	8.15 243	8.15 247	9.99 996	10	50	8.23 333	8.23 339	9.99 994	10
49 0	8.15 391	8.15 395	9.99 996	**0 11**	**59** 0	8.23 456	8.23 462	9.99 994	**0 1**
10	8.15 538	8.15 543	9.99 996	50	10	8.23 578	8.23 585	9.99 994	50
20	8.15 685	8.15 690	9.99 996	40	20	8.23 700	8.23 707	9.99 994	40
30	8.15 832	8.15 836	9.99 996	30	30	8.23 822	8.23 829	9.99 993	30
40	8.15 978	8.15 982	9.99 995	20	40	8.23 944	8.23 950	9.99 993	20
50	8.16 123	8.16 128	9.99 995	10	50	8.24 065	8.24 071	9.99 993	10
50 0	8.16 268	8.16 273	9.99 995	**0 10**	**60** 0	8.24 186	8.24 192	9.99 993	**0 0**
′ ″	log cos	log cot	log sin	″ ′	′ ″	log cos	log cot	log sin	″ ′

′ ″	log sin	log tan	log cos	″ ′	′ ″	log sin	log tan	log cos	″ ′
0 0	8.24 186	8.24 192	9.99 993	0 60	10 0	8.30 879	8.30 888	9.99 991	0 50
10	8.24 306	8.24 313	9.99 993	50	10	8.30 983	8.30 992	9.99 991	50
20	8.24 426	8.24 433	9.99 993	40	20	8.31 086	8.31 095	9.99 991	40
30	8.24 546	8.24 553	9.99 993	30	30	8.31 188	8.31 198	9.99 991	30
40	8.24 665	8.24 672	9.99 993	20	40	8.31 291	8.31 300	9.99 991	20
50	8.24 785	8.24 791	9.99 993	10	50	8.31 393	8.31 403	9.99 991	10
1 0	8.24 903	8.24 910	9.99 993	0 59	11 0	8.31 495	8.31 505	9.99 991	0 49
10	8.25 022	8.25 029	9.99 993	50	10	8.31 597	8.31 606	9.99 991	50
20	8.25 140	8.25 147	9.99 993	40	20	8.31 699	8.31 708	9.99 991	40
30	8.25 258	8.25 265	9.99 993	30	30	8.31 800	8.31 809	9.99 991	30
40	8.25 375	8.25 382	9.99 993	20	40	8.31 901	8.31 911	9.99 991	20
50	8.25 493	8.25 500	9.99 993	10	50	8.32 002	8.32 012	9.99 991	10
2 0	8.25 609	8.25 616	9.99 993	0 58	12 0	8.32 103	8.32 112	9.99 990	0 48
10	8.25 726	8.25 733	9.99 993	50	10	8.32 203	8.32 213	9.99 990	50
20	8.25 842	8.25 849	9.99 993	40	20	8.32 303	8.32 313	9.99 990	40
30	8.25 958	8.25 965	9.99 993	30	30	8.32 403	8.32 413	9.99 990	30
40	8.26 074	8.26 081	9.99 993	20	40	8.32 503	8.32 513	9.99 990	20
50	8.26 189	8.26 196	9.99 993	10	50	8.32 602	8.32 612	9.99 990	10
3 0	8.26 304	8.26 312	9.99 993	0 57	13 0	8.32 702	8.32 711	9.99 990	0 47
10	8.26 419	8.26 426	9.99 993	50	10	8.32 801	8.32 811	9.99 990	50
20	8.26 533	8.26 541	9.99 993	40	20	8.32 899	8.32 909	9.99 990	40
30	8.26 648	8.26 655	9.99 993	30	30	8.32 998	8.33 008	9.99 990	30
40	8.26 761	8.26 769	9.99 993	20	40	8.33 096	8.33 106	9.99 990	20
50	8.26 875	8.26 882	9.99 993	10	50	8.33 195	8.33 205	9.99 990	10
4 0	8.26 988	8.26 996	9.99 992	0 56	14 0	8.33 292	8.33 302	9.99 990	0 46
10	8.27 101	8.27 109	9.99 992	50	10	8.33 390	8.33 400	9.99 990	50
20	8.27 214	8.27 221	9.99 992	40	20	8.33 488	8.33 498	9.99 990	40
30	8.27 326	8.27 334	9.99 992	30	30	8.33 585	8.33 595	9.99 990	30
40	8.27 438	8.27 446	9.99 992	20	40	8.33 682	8.33 692	9.99 990	20
50	8.27 550	8.27 558	9.99 992	10	50	8.33 779	8.33 789	9.99 990	10
5 0	8.27 661	8.27 669	9.99 992	0 55	15 0	8.33 875	8.33 886	9.99 990	0 45
10	8.27 773	8.27 780	9.99 992	50	10	8.33 972	8.33 982	9.99 990	50
20	8.27 883	8.27 891	9.99 992	40	20	8.34 068	8.34 078	9.99 990	40
30	8.27 994	8.28 002	9.99 992	30	30	8.34 164	8.34 174	9.99 990	30
40	8.28 104	8.28 112	9.99 992	20	40	8.34 260	8.34 270	9.99 989	20
50	8.28 215	8.28 223	9.99 992	10	50	8.34 355	8.34 366	9.99 989	10
6 0	8.28 324	8.28 332	9.99 992	0 54	16 0	8.34 450	8.34 461	9.99 989	0 44
10	8.28 434	8.28 442	9.99 992	50	10	8.34 546	8.34 556	9.99 989	50
20	8.28 543	8.28 551	9.99 992	40	20	8.34 640	8.34 651	9.99 989	40
30	8.28 652	8.28 660	9.99 992	30	30	8.34 735	8.34 746	9.99 989	30
40	8.28 761	8.28 769	9.99 992	20	40	8.34 830	8.34 840	9.99 989	20
50	8.28 869	8.28 877	9.99 992	10	50	8.34 924	8.34 935	9.99 989	10
7 0	8.28 977	8.28 986	9.99 992	0 53	17 0	8.35 018	8.35 029	9.99 989	0 43
10	8.29 085	8.29 094	9.99 992	50	10	8.35 112	8.35 123	9.99 989	50
20	8.29 193	8.29 201	9.99 992	40	20	8.35 206	8.35 217	9.99 989	40
30	8.29 300	8.29 309	9.99 992	30	30	8.35 299	8.35 310	9.99 989	30
40	8.29 407	8.29 416	9.99 992	20	40	8.35 392	8.35 403	9.99 989	20
50	8.29 514	8.29 523	9.99 992	10	50	8.35 485	8.35 497	9.99 989	10
8 0	8.29 621	8.29 629	9.99 992	0 52	18 0	8.35 578	8.35 590	9.99 989	0 42
10	8.29 727	8.29 736	9.99 991	50	10	8.35 671	8.35 682	9.99 989	50
20	8.29 833	8.29 842	9.99 991	40	20	8.35 764	8.35 775	9.99 989	40
30	8.29 939	8.29 947	9.99 991	30	30	8.35 856	8.35 867	9.99 989	30
40	8.30 044	8.30 053	9.99 991	20	40	8.35 948	8.35 959	9.99 989	20
50	8.30 150	8.30 158	9.99 991	10	50	8.36 040	8.36 051	9.99 989	10
9 0	8.30 255	8.30 263	9.99 991	0 51	19 0	8.36 131	8.36 143	9.99 989	0 41
10	8.30 359	8.30 368	9.99 991	50	10	8.36 223	8.36 235	9.99 988	50
20	8.30 464	8.30 473	9.99 991	40	20	8.36 314	8.36 326	9.99 988	40
30	8.30 568	8.30 577	9.99 991	30	30	8.36 405	8.36 417	9.99 988	30
40	8.30 672	8.30 681	9.99 991	20	40	8.36 496	8.36 508	9.99 988	20
50	8.30 776	8.30 785	9.99 991	10	50	8.36 587	8.36 599	9.99 988	10
10 0	8.30 879	8.30 883	9.99 991	0 50	20 0	8.36 678	8.36 689	9.99 988	0 40
′ ″	log cos	log cot	log sin	″ ′	′ ″	log cos	log cot	log sin	″ ′

′ ″	log sin	log tan	log cos	″ ′	′ ″	log sin	log tan	log cos	″ ′
20 0	8.36 678	8.36 689	9.99 988	**0 40**	**80** 0	8.41 792	8.41 807	9.99 985	**0 30**
10	8.36 768	8.36 780	9.99 988	50	10	8.41 872	8.41 887	9.99 985	50
20	8.36 858	8.36 870	9.99 988	40	20	8.41 952	8.41 967	9.99 985	40
30	8.36 948	8.36 960	9.99 988	30	30	8.42 032	8.42 048	9.99 985	30
40	8.37 038	8.37 050	9.99 988	20	40	8.42 112	8.42 127	9.99 985	20
50	8.37 128	8.37 140	9.99 988	10	50	8.42 192	8.42 207	9.99 985	10
21 0	8.37 217	8.37 229	9.99 988	**0 39**	**31** 0	8.42 272	8.42 287	9.99 985	**0 29**
10	8.37 306	8.37 318	9.99 988	50	10	8.42 351	8.42 366	9.99 985	50
20	8.37 395	8.37 408	9.99 988	40	20	8.42 430	8.42 446	9.99 985	40
30	8.37 484	8.37 497	9.99 988	30	30	8.42 510	8.42 525	9.99 985	30
40	8.37 573	8.37 585	9.99 988	20	40	8.42 589	8.42 604	9.99 985	20
50	8.37 662	8.37 674	9.99 988	10	50	8.42 667	8.42 683	9.99 985	10
22 0	8.37 750	8.37 762	9.99 988	**0 38**	**82** 0	8.42 746	8.42 762	9.99 984	**0 28**
10	8.37 838	8.37 850	9.99 988	50	10	8.42 825	8.42 840	9.99 984	50
20	8.37 926	8.37 938	9.99 988	40	20	8.42 903	8.42 919	9.99 984	40
30	8.38 014	8.38 026	9.99 987	30	30	8.42 982	8.42 997	9.99 984	30
40	8.38 101	8.38 114	9.99 987	20	40	8.43 060	8.43 075	9.99 984	20
50	8.38 189	8.38 202	9.99 987	10	50	8.43 138	8.43 154	9.99 984	10
23 0	8.38 276	8.38 289	9.99 987	**0 37**	**33** 0	8.43 216	8.43 232	9.99 984	**0 27**
10	8.38 363	8.38 376	9.99 987	50	10	8.43 293	8.43 309	9.99 984	50
20	8.38 450	8.38 463	9.99 987	40	20	8.43 371	8.43 387	9.99 984	40
30	8.38 537	8.38 550	9.99 987	30	30	8.43 448	8.43 464	9.99 984	30
40	8.38 624	8.38 636	9.99 987	20	40	8.43 526	8.43 542	9.99 984	20
50	8.38 710	8.38 723	9.99 987	10	50	8.43 603	8.43 619	9.99 984	10
24 0	8.38 796	8.38 809	9.99 987	**0 36**	**34** 0	8.43 680	8.43 696	9.99 984	**0 26**
10	8.38 882	8.38 895	9.99 987	50	10	8.43 757	8.43 773	9.99 984	50
20	8.38 968	8.38 981	9.99 987	40	20	8.43 834	8.43 850	9.99 984	40
30	8.39 054	8.39 067	9.99 987	30	30	8.43 910	8.43 927	9.99 984	30
40	8.39 139	8.39 153	9.99 987	20	40	8.43 987	8.44 003	9.99 984	20
50	8.39 225	8.39 238	9.99 987	10	50	8.44 063	8.44 080	9.99 983	10
25 0	8.39 310	8.39 323	9.99 987	**0 35**	**85** 0	8.44 139	8.44 156	9.99 983	**0 25**
10	8.39 395	8.39 408	9.99 987	50	10	8.44 216	8.44 232	9.99 983	50
20	8.39 480	8.39 493	9.99 987	40	20	8.44 292	8.44 308	9.99 983	40
30	8.39 565	8.39 578	9.99 987	30	30	8.44 367	8.44 384	9.99 983	30
40	8.39 649	8.39 663	9.99 987	20	40	8.44 443	8.44 460	9.99 983	20
50	8.39 734	8.39 747	9.99 986	10	50	8.44 519	8.44 536	9.99 983	10
26 0	8.39 818	8.39 832	9.99 986	**0 34**	**36** 0	8.44 594	8.44 611	9.99 983	**0 24**
10	8.39 902	8.39 916	9.99 986	50	10	8.44 669	8.44 686	9.99 983	50
20	8.39 986	8.40 000	9.99 986	40	20	8.44 745	8.44 762	9.99 983	40
30	8.40 070	8.40 083	9.99 986	30	30	8.44 820	8.44 837	9.99 983	30
40	8.40 153	8.40 167	9.99 986	20	40	8.44 895	8.44 912	9.99 983	20
50	8.40 237	8.40 251	9.99 986	10	50	8.44 969	8.44 987	9.99 983	10
27 0	8.40 320	8.40 334	9.99 986	**0 33**	**87** 0	8.45 044	8.45 061	9.99 983	**0 23**
10	8.40 403	8.40 417	9.99 986	50	10	8.45 119	8.45 136	9.99 983	50
20	8.40 486	8.40 500	9.99 986	40	20	8.45 193	8.45 210	9.99 983	40
30	8.40 569	8.40 583	9.99 986	30	30	8.45 267	8.45 285	9.99 983	30
40	8.40 651	8.40 665	9.99 986	20	40	8.45 341	8.45 359	9.99 982	20
50	8.40 734	8.40 748	9.99 986	10	50	8.45 415	8.45 433	9.99 982	10
28 0	8.40 816	8.40 830	9.99 986	**0 32**	**38** 0	8.45 489	8.45 507	9.99 982	**0 22**
10	8.40 898	8.40 913	9.99 986	50	10	8.45 563	8.45 581	9.99 982	50
20	8.40 980	8.40 995	9.99 986	40	20	8.45 637	8.45 655	9.99 982	40
30	8.41 062	8.41 077	9.99 986	30	30	8.45 710	8.45 728	9.99 982	30
40	8.41 144	8.41 158	9.99 986	20	40	8.45 784	8.45 802	9.99 982	20
50	8.41 225	8.41 240	9.99 986	10	50	8.45 857	8.45 875	9.99 982	10
29 0	8.41 307	8.41 321	9.99 985	**0 31**	**39** 0	8.45 930	8.45 948	9.99 982	**0 21**
10	8.41 388	8.41 403	9.99 985	50	10	8.46 003	8.46 021	9.99 982	50
20	8.41 469	8.41 484	9.99 985	40	20	8.46 076	8.46 094	9.99 982	40
30	8.41 550	8.41 565	9.99 985	30	30	8.46 149	8.46 167	9.99 982	30
40	8.41 631	8.41 646	9.99 985	20	40	8.46 222	8.46 240	9.99 982	20
50	8.41 711	8.41 726	9.99 985	10	50	8.46 294	8.46 312	9.99 982	10
30 0	8.41 792	8.99 985	9.99 985	**0 30**	**40** 0	8.46 366	8.46 385	9.99 982	**0 20**
′ ″	log cos	log cot	log sin	″ ′	′ ″	log cos	log cot	log sin	″ ′

′ ′′	log sin	log tan	log cos	′′ ′	′ ′′	log sin	log tan	log cos	′′ ′
40 0	8. 46 366	8. 46 385	9. 99 982	**0 20**	**50** 0	8. 50 504	8. 50 527	9. 99 978	**0 10**
10	8. 46 439	8. 46 457	9. 99 982	50	10	8. 50 570	8. 50 593	9. 99 978	50
20	8. 46 511	8. 46 529	9. 99 982	40	20	8. 50 636	8. 50 658	9. 99 978	40
30	8. 46 583	8. 46 602	9. 99 981	30	30	8. 50 701	8. 50 724	9. 99 978	30
40	8. 46 655	8. 46 674	9. 99 981	20	40	8. 50 767	8. 50 789	9. 99 977	20
50	8. 46 727	8. 46 745	9. 99 981	10	50	8. 50 832	8. 50 855	9. 99 977	10
41 0	8. 46 799	8. 46 817	9. 99 981	**0 19**	**51** 0	8. 50 897	8. 50 920	9. 99 977	**0 9**
10	8. 46 870	8. 46 889	9. 99 981	50	10	8. 50 963	8. 50 985	9. 99 977	50
20	8. 46 942	8. 46 960	9. 99 981	40	20	8. 51 028	8. 51 050	9. 99 977	40
30	8. 47 013	8. 47 032	9. 99 981	30	30	8. 51 092	8. 51 115	9. 99 977	30
40	8. 47 084	8. 47 103	9. 99 981	20	40	8. 51 157	8. 51 180	9. 99 977	20
50	8. 47 155	8. 47 174	9. 99 981	10	50	8. 51 222	8. 51 245	9. 99 977	10
42 0	8. 47 226	8. 47 245	9. 99 981	**0 18**	**52** 0	8. 51 287	8. 51 310	9. 99 977	**0 8**
10	8. 47 297	8. 47 316	9. 99 981	50	10	8. 51 351	8. 51 374	9. 99 977	50
20	8. 47 368	8. 47 387	9. 99 981	40	20	8. 51 416	8. 51 439	9. 99 977	40
30	8. 47 439	8. 47 458	9. 99 981	30	30	8. 51 480	8. 51 503	9. 99 977	30
40	8. 47 509	8. 47 528	9. 99 981	20	40	8. 51 544	8. 51 568	9. 99 977	20
50	8. 47 580	8. 47 599	9. 99 981	10	50	8. 51 609	8. 51 632	9. 99 977	10
43 0	8. 47 650	8. 47 669	9. 99 981	**0 17**	**53** 0	8. 51 673	8. 51 696	9. 99 977	**0 7**
10	8. 47 720	8. 47 740	9. 99 980	50	10	8. 51 737	8. 51 760	9. 99 976	50
20	8. 47 790	8. 47 810	9. 99 980	40	20	8. 51 801	8. 51 824	9. 99 976	40
30	8. 47 850	8. 47 880	9. 99 980	30	30	8. 51 864	8. 51 888	9. 99 976	30
40	8. 47 930	8. 47 950	9. 99 980	20	40	8. 51 928	8. 51 952	9. 99 976	20
50	8. 48 000	8. 48 020	9. 99 980	10	50	8. 51 992	8. 52 015	9. 99 976	10
44 0	8. 48 069	8. 48 090	9. 99 980	**0 16**	**54** 0	8. 52 055	8. 52 079	9. 99 976	**0 6**
10	8. 48 139	8. 48 159	9. 99 980	50	10	8. 52 119	8. 52 143	9. 99 976	50
20	8. 48 208	8. 48 228	9. 99 980	40	20	8. 52 182	8. 52 206	9. 99 976	40
30	8. 48 278	8. 48 298	9. 99 980	30	30	8. 52 245	8. 52 269	9. 99 976	30
40	8. 48 347	8. 48 367	9. 99 980	20	40	8. 52 308	8. 52 332	9. 99 976	20
50	8. 48 416	8. 48 436	9. 99 980	10	50	8. 52 371	8. 52 396	9. 99 976	10
45 0	8. 48 485	8. 48 505	9. 99 980	**0 15**	**55** 0	8. 52 434	8. 52 459	9. 99 976	**0 5**
10	8. 48 554	8. 48 574	9. 99 980	50	10	8. 52 497	8. 52 522	9. 99 976	50
20	8. 48 622	8. 48 643	9. 99 980	40	20	8. 52 560	8. 52 584	9. 99 976	40
30	8. 48 691	8. 48 711	9. 99 980	30	30	8. 52 623	8. 52 647	9. 99 975	30
40	8. 48 760	8. 48 780	9. 99 979	20	40	8. 52 685	8. 52 710	9. 99 975	20
50	8. 48 828	8. 48 849	9. 99 979	10	50	8. 52 748	8. 52 772	9. 99 975	10
46 0	8. 48 896	8. 48 917	9. 99 979	**0 14**	**56** 0	8. 52 810	8. 52 835	9. 99 975	**0 4**
10	8. 48 965	8. 48 985	9. 99 979	50	10	8. 52 872	8. 52 897	9. 99 975	50
20	8. 49 033	8. 49 053	9. 99 979	40	20	8. 52 935	8. 52 960	9. 99 975	40
30	8. 49 101	8. 49 121	9. 99 979	30	30	8. 52 997	8. 53 022	9. 99 975	30
40	8. 49 169	8. 49 189	9. 99 979	20	40	8. 53 059	8. 53 084	9. 99 975	20
50	8. 49 236	8. 49 257	9. 99 979	10	50	8. 53 121	8. 53 146	9. 99 975	10
47 0	8. 49 304	8. 49 325	9. 99 979	**0 13**	**57** 0	8. 53 183	8. 53 208	9. 99 975	**0 3**
10	8. 49 372	8. 49 393	9. 99 979	50	10	8. 53 245	8. 53 270	9. 99 975	50
20	8. 49 439	8. 49 460	9. 99 979	40	20	8. 53 306	8. 53 332	9. 99 975	40
30	8. 49 506	8. 49 528	9. 99 979	30	30	8. 53 368	8. 53 393	9. 99 975	30
40	8. 49 574	8. 49 595	9. 99 979	20	40	8. 53 429	8. 53 455	9. 99 975	20
50	8. 49 641	8. 49 662	9. 99 979	10	50	8. 53 491	8. 53 516	9. 99 974	10
48 0	8. 49 708	8. 49 729	9. 99 979	**0 12**	**58** 0	8. 53 552	8. 53 578	9. 99 974	**0 2**
10	8. 49 775	8. 49 796	9. 99 979	50	10	8. 53 614	8. 53 639	9. 99 974	50
20	8. 49 842	8. 49 863	9. 99 978	40	20	8. 53 675	8. 53 700	9. 99 974	40
30	8. 49 908	8. 49 930	9. 99 978	30	30	8. 53 736	8. 53 762	9. 99 974	30
40	8. 49 975	8. 49 997	9. 99 978	20	40	8. 53 797	8. 53 823	9. 99 974	20
50	8. 50 042	8. 50 063	9. 99 978	10	50	8. 53 858	8. 53 884	9. 99 974	10
49 0	8. 50 108	8. 50 130	9. 99 978	**0 11**	**59** 0	8. 53 919	8. 53 945	9. 99 974	**0 1**
10	8. 50 174	8. 50 196	9. 99 978	50	10	8. 53 979	8. 54 005	9. 99 974	50
20	8. 50 241	8. 50 263	9. 99 978	40	20	8. 54 040	8. 54 066	9. 99 974	40
30	8. 50 307	8. 50 329	9. 99 978	30	30	8. 54 101	8. 54 127	9. 99 974	30
40	8. 50 373	8. 50 395	9. 99 978	20	40	8. 54 161	8. 54 187	9. 99 974	20
50	8. 50 439	8. 50 461	9. 99 978	10	50	8. 54 222	8. 54 248	9. 99 974	10
50 0	8. 50 504	8. 50 527	9. 99 978	**0 10**	**60** 0	8. 54 282	8. 54 308	9. 99 974	**0 0**
′ ′′	log cos	log cot	log sin	′′ ′	′ ′′	log cos	log cot	log sin	′′ ′

′	log sin 8	log tan 8	log cot 11	log cos 9	′
0	24 186	24 192	75 808	99 993	60
1	24 903	24 910	75 090	99 993	59
2	25 609	25 616	74 384	99 993	58
3	26 304	26 312	73 688	99 993	57
4	26 988	26 996	73 004	99 992	56
5	27 661	27 669	72 331	99 992	55
6	28 324	28 332	71 668	99 992	54
7	28 977	28 986	71 014	99 992	53
8	29 621	29 629	70 371	99 992	52
9	30 255	30 263	69 737	99 991	51
10	30 879	30 888	69 112	99 991	50
11	31 495	31 505	68 495	99 991	49
12	32 103	32 112	67 888	99 990	48
13	32 702	32 711	67 289	99 990	47
14	33 292	33 302	66 698	99 990	46
15	33 875	33 886	66 114	99 990	45
16	34 450	34 461	65 539	99 989	44
17	35 018	35 029	64 971	99 989	43
18	35 578	35 590	64 410	99 989	42
19	36 131	36 143	63 857	99 989	41
20	36 678	36 689	63 311	99 988	40
21	37 217	37 229	62 771	99 988	39
22	37 750	37 762	62 238	99 988	38
23	38 276	38 289	61 711	99 987	37
24	38 796	38 809	61 191	99 987	36
25	39 310	39 323	60 677	99 987	35
26	39 818	39 832	60 168	99 986	34
27	40 320	40 334	59 666	99 986	33
28	40 816	40 830	59 170	99 986	32
29	41 307	41 321	58 679	99 985	31
30	41 792	41 807	58 193	99 985	30
31	42 272	42 287	57 713	99 985	29
32	42 746	42 762	57 238	99 984	28
33	43 216	43 232	56 768	99 984	27
34	43 680	43 696	56 304	99 984	26
35	44 139	44 156	55 844	99 983	25
36	44 594	44 611	55 389	99 983	24
37	45 044	45 061	54 939	99 983	23
38	45 489	45 507	54 493	99 982	22
39	45 930	45 948	54 052	99 982	21
40	46 366	46 385	53 615	99 982	20
41	46 799	46 817	53 183	99 981	19
42	47 226	47 245	52 755	99 981	18
43	47 650	47 669	52 331	99 981	17
44	48 069	48 089	51 911	99 980	16
45	48 485	48 505	51 495	99 980	15
46	48 896	48 917	51 083	99 979	14
47	49 304	49 325	50 675	99 979	13
48	49 708	49 729	50 271	99 979	12
49	50 108	50 130	49 870	99 978	11
50	50 504	50 527	49 473	99 978	10
51	50 897	50 920	49 080	99 977	9
52	51 287	51 310	48 690	99 977	8
53	51 673	51 696	48 304	99 977	7
54	52 055	52 079	47 921	99 976	6
55	52 434	52 459	47 541	99 976	5
56	52 810	52 835	47 165	99 975	4
57	53 183	53 208	46 792	99 975	3
58	53 552	53 578	46 422	99 974	2
59	53 919	53 945	46 055	99 974	1
60	54 282	54 308	45 692	99 974	0
′	log cos 8	log cot 8	log tan 11	log sin 9	′

′	log sin 8	log tan 8	log cot 11	log cos 9	′
0	54 282	54 308	45 692	99 974	60
1	54 642	54 669	45 331	99 973	59
2	54 999	55 027	44 973	99 973	58
3	55 354	55 382	44 618	99 972	57
4	55 705	55 734	44 266	99 972	56
5	56 054	56 083	43 917	99 971	55
6	56 400	56 429	43 571	99 971	54
7	56 743	56 773	43 227	99 970	53
8	57 084	57 114	42 886	99 970	52
9	57 421	57 452	42 548	99 969	51
10	57 757	57 788	42 212	99 969	50
11	58 089	58 121	41 879	99 968	49
12	58 419	58 451	41 549	99 968	48
13	58 747	58 779	41 221	99 967	47
14	59 072	59 105	40 895	99 967	46
15	59 395	59 428	40 572	99 967	45
16	59 715	59 749	40 251	99 966	44
17	60 033	60 068	39 932	99 966	43
18	60 349	60 384	39 616	99 965	42
19	60 662	60 698	39 302	99 964	41
20	60 973	61 009	38 991	99 964	40
21	61 282	61 319	38 681	99 963	39
22	61 589	61 626	38 374	99 963	38
23	61 894	61 931	38 069	99 962	37
24	62 196	62 234	37 766	99 962	36
25	62 497	62 535	37 465	99 961	35
26	62 795	62 834	37 166	99 961	34
27	63 091	63 131	36 869	99 960	33
28	63 385	63 426	36 574	99 960	32
29	63 678	63 718	36 282	99 959	31
30	63 968	64 009	35 991	99 959	30
31	64 256	64 298	35 702	99 958	29
32	64 543	64 585	35 415	99 958	28
33	64 827	64 870	35 130	99 957	27
34	65 110	65 154	34 846	99 956	26
35	65 391	65 435	34 565	99 956	25
36	65 670	65 715	34 285	99 955	24
37	65 947	65 993	34 007	99 955	23
38	66 223	66 269	33 731	99 954	22
39	66 497	66 543	33 457	99 954	21
40	66 769	66 816	33 184	99 953	20
41	67 039	67 087	32 913	99 952	19
42	67 308	67 356	32 644	99 952	18
43	67 575	67 624	32 376	99 951	17
44	67 841	67 890	32 110	99 951	16
45	68 104	68 154	31 846	99 950	15
46	68 367	68 417	31 583	99 949	14
47	68 627	68 678	31 322	99 949	13
48	68 886	68 938	31 062	99 948	12
49	69 144	69 196	30 804	99 948	11
50	69 400	69 453	30 547	99 947	10
51	69 654	69 708	30 292	99 946	9
52	69 907	69 962	30 038	99 946	8
53	70 159	70 214	29 786	99 945	7
54	70 409	70 465	29 535	99 944	6
55	70 658	70 714	29 286	99 944	5
56	70 905	70 962	29 038	99 943	4
57	71 151	71 208	28 792	99 942	3
58	71 395	71 453	28 547	99 942	2
59	71 638	71 697	28 303	99 941	1
60	71 880	71 940	28 060	99 940	0
′	log cos 8	log cot 8	log tan 11	log sin 9	′

′	log sin	log tan	log cot	log cos	′	′	log sin	log tan	log cot	log cos	′
	—8—	—8—	—11—	—9—			—8—	—8—	—11—	—9—	
0	71 880	71 940	28 060	99 940	60	0	84 358	84 464	15 536	99 894	60
1	72 120	72 181	27 819	99 940	59	1	84 539	84 646	15 354	99 893	59
2	72 359	72 420	27 580	99 939	58	2	84 718	84 826	15 174	99 892	58
3	72 597	72 659	27 341	99 938	57	3	84 897	85 006	14 994	99 891	57
4	72 834	72 896	27 104	99 938	56	4	85 075	85 185	14 815	99 891	56
5	73 069	73 132	26 868	99 937	55	5	85 252	85 363	14 637	99 890	55
6	73 303	73 366	26 634	99 936	54	6	85 429	85 540	14 460	99 889	54
7	73 535	73 600	26 400	99 936	53	7	85 605	85 717	14 283	99 888	53
8	73 767	73 832	26 168	99 935	52	8	85 780	85 893	14 107	99 887	52
9	73 997	74 063	25 937	99 934	51	9	85 955	86 069	13 931	99 886	51
10	74 226	74 292	25 708	99 934	50	10	86 128	86 243	13 757	99 885	50
11	74 454	74 521	25 479	99 933	49	11	86 301	86 417	13 583	99 884	49
12	74 680	74 748	25 252	99 932	48	12	86 474	86 591	13 409	99 883	48
13	74 906	74 974	25 026	99 932	47	13	86 645	86 763	13 237	99 882	47
14	75 130	75 199	24 801	99 931	46	14	86 816	86 935	13 065	99 881	46
15	75 353	75 423	24 577	99 930	45	15	86 987	87 106	12 894	99 880	45
16	75 575	75 645	24 355	99 929	44	16	87 156	87 277	12 723	99 879	44
17	75 795	75 867	24 133	99 929	43	17	87 325	87 447	12 553	99 879	43
18	76 015	76 087	23 913	99 928	42	18	87 494	87 616	12 384	99 878	42
19	76 234	76 306	23 694	99 927	41	19	87 661	87 785	12 215	99 877	41
20	76 451	76 525	23 475	99 926	40	20	87 829	87 953	12 047	99 876	40
21	76 667	76 742	23 258	99 926	39	21	87 995	88 120	11 880	99 875·	39
22	76 883	76 958	23 042	99 925	38	22	88 161	88 287	11 713	99 874	38
23	77 097	77 173	22 827	99 924	37	23	88 326	88 453	11 547	99 873	37
24	77 310	77 387	22 613	99 923	36	24	88 490	88 618	11 382	99 872	36
25	77 522	77 600	22 400	99 923	35	25	88 654	88 783	11 217	99 871	35
26	77 733	77 811	22 189	99 922	34	26	88 817	88 948	11 052	99 870	34
27	77 943	78 022	21 978	99 921	33	27	88 980	89 111	10 889	99 869	33
28	78 152	78 232	21 768	99 920	32	28	89 142	89 274	10 726	99 868	32
29	78 360	78 441	21 559	99 920	31	29	89 304	89 437	10 563	99 867	31
30	78 568	78 649	21 351	99 919	30	30	89 464	89 598	10 402	99 866	30
31	78 774	78 855	21 145	99 918	29	31	89 625	89 760	10 240	99 865	29
32	78 979	79 061	20 939	99 917	28	32	89 784	89 920	10 080	99 864	28
33	79 183	79 266	20 734	99 917	27	33	89 943	90 080	09 920	99 863	27
34	79 386	79 470	20 530	99 916	26	34	90 102	90 240	09 760	99 862	26
35	79 588	79 673	20 327	99 915	25	35	90 260	90 399	09 601	99 861	25
36	79 789	79 875	20 125	99 914	24	36	90 417	90 557	09 443	99 860	24
37	79 990	80 076	19 924	99 913	23	37	90 574	90 715	09 285	99 859	23
38	80 189	80 277	19 723	99 913	22	38	90 730	90 872	09 128	99 858	22
39	80 388	80 476	19 524	99 912	21	39	90 885	91 029	08 971	99 857	21
40	80 585	80 674	19 326	99 911	20	40	91 040	91 185	08 815	99 856	20
41	80 782	80 872	19 128	99 910	19	41	91 195	91 340	08 660	99 855	19
42	80 978	81 068	18 932	99 909	18	42	91 349	91 495	08 505	99 854	18
43	81 173	81 264	18 736	99 909	17	43	91 502	91 650	08 350	99 853	17
44	81 367	81 459	18 541	99 908	16	44	91 655	91 803	08 197	99 852	16
45	81 560	81 653	18 347	99 907	15	45	91 807	91 957	08 043	99 851	15
46	81 752	81 846	18 154	99 906	14	46	91 959	92 110	07 890	99 850	14
47	81 944	82 038	17 962	99 905	13	47	92 110	92 262	07 738	99 848	13
48	82 134	82 230	17 770	99 904	12	48	92 261	92 414	07 586	99 847	12
49	82 324	82 420	17 580	99 904	11	49	92 411	92 565	07 435	99 846	11
50	82 513	82 610	17 390	99 903	10	50	92 561	92 716	07 284	99 845	10
51	82 701	82 799	17 201	99 902	9	51	92 710	92 866	07 134	99 844	9
52	82 888	82 987	17 013	99 901	8	52	92 859	93 016	06 984	99 843	8
53	83 075	83 175	16 825	99 900	7	53	93 007	93 165	06 835	99 842	7
54	83 261	83 361	16 639	99 899	6	54	93 154	93 313	06 687	99 841	6
55	83 446	83 547	16 453	99 898	5	55	93 301	93 462	06 538	99 840	5
56	83 630	83 732	16 268	99 898	4	56	93 448	93 609	06 391	99 839	4
57	83 813	83 916	16 084	99 897	3	57	93 594	93 756	06 244	99 838	3
58	83 996	84 100	15 900	99 896	2	58	93 740	93 903	06 097	99 837	2
59	84 177	84 282	15 718	99 895	1	59	93 885	94 049	05 951	99 836	1
60	84 358	84 464	15 536	99 894	0	60	94 030	94 195	05 805	99 834	0
	—8—	—8—	—11—	—9—			—8—	—8—	—11—	—9—	
′	log cos	log cot	log tan	log sin	′	′	log cos	log cot	log tan	log sin	′

5°

′	log sin	log tan	log cot	log cos	′
	—8—	—8—	—11—	—9—	
0	94 030	94 195	05 805	99 834	60
1	94 174	94 340	05 660	99 833	59
2	94 317	94 485	05 515	99 832	58
3	94 461	94 630	05 370	99 831	57
4	94 603	94 773	05 227	99 830	56
5	94 746	94 917	05 083	99 829	55
6	94 887	95 060	04 940	99 828	54
7	95 170	95 202	04 798	99 827	53
8	95 170	95 344	04 656	99 825	52
9	95 310	95 486	04 514	99 824	51
10	95 450	95 627	04 373	99 823	50
11	95 589	95 767	04 233	99 822	49
12	95 728	95 908	04 092	99 821	48
13	95 867	96 047	03 953	99 820	47
14	96 005	96 187	03 813	99 819	46
15	96 143	96 325	03 675	99 817	45
16	96 280	96 464	03 536	99 816	44
17	96 417	96 602	03 398	99 815	43
18	96 553	96 739	03 261	99 814	42
19	96 689	96 877	03 123	99 813	41
20	96 825	97 013	02 987	99 812	40
21	96 960	97 150	02 850	99 810	39
22	97 095	97 285	02 715	99 809	38
23	97 229	97 421	02 579	99 808	37
24	97 363	97 556	02 444	99 807	36
25	97 496	97 691	02 309	99 806	35
26	97 629	97 825	02 175	99 804	34
27	97 762	97 959	02 041	99 803	33
28	97 894	98 092	01 908	99 802	32
29	98 026	98 225	01 775	99 801	31
30	98 157	98 358	01 642	99 800	30
31	98 288	98 490	01 510	99 798	29
32	98 419	98 622	01 378	99 797	28
33	98 549	98 753	01 247	99 796	27
34	98 679	98 884	01 116	99 795	26
35	93 808	99 015	00 985	99 793	25
36	98 937	99 145	00 855	99 792	24
37	99 066	99 275	00 725	99 791	23
38	99 194	99 405	00 595	99 790	22
39	99 322	99 534	00 466	99 788	21
40	99 450	99 662	00 338	99 787	20
41	99 577	99 791	00 209	99 786	19
42	99 704	99 919	00 081	99 785	18
43	99 830	00 046	99 954	99 783	17
44	99 956	00 174	99 826	99 782	16
45	00 082	00 301	99 699	99 781	15
46	00 207	00 427	99 573	99 780	14
47	00 332	00 553	99 447	99 778	13
48	00 456	00 679	99 321	99 777	12
49	00 581	00 805	99 195	99 776	11
50	00 704	00 930	99 070	99 775	10
51	00 828	01 055	98 945	99 773	9
52	00 951	01 179	98 821	99 772	8
53	01 074	01 303	98 697	99 771	7
54	01 196	01 427	98 573	99 769	6
55	01 318	01 550	98 450	99 768	5
56	01 440	01 673	98 327	99 767	4
57	01 561	01 796	98 204	99 765	3
58	01 682	01 918	98 082	99 764	2
59	01 803	02 040	97 960	99 763	1
60	01 923	02 162	97 838	99 761	0
	—9—	—9—	—10—	—9—	
′	log cos	log cot	log tan	log sin	′

84°

6°

′	log sin	log tan	log cot	log cos	′
	—9—	—9—	—10—	—9—	
0	01 923	02 162	97 838	99 761	60
1	02 043	02 283	97 717	99 760	59
2	02 163	02 404	97 596	99 759	58
3	02 283	02 525	97 475	99 757	57
4	02 402	02 645	97 355	99 756	56
5	02 520	02 766	97 234	99 755	55
6	02 639	02 885	97 115	99 753	54
7	02 757	03 005	96 995	99 752	53
8	02 874	03 124	96 876	99 751	52
9	02 992	03 242	96 758	99 749	51
10	03 109	03 361	96 639	99 748	50
11	03 226	03 479	96 521	99 747	49
12	03 342	03 597	96 403	99 745	48
13	03 458	03 714	96 286	99 744	47
14	03 574	03 832	96 168	99 742	46
15	03 690	03 948	96 052	99 741	45
16	03 805	04 065	95 935	99 740	44
17	03 920	04 181	95 819	99 738	43
18	04 034	04 297	95 703	99 737	42
19	04 149	04 413	95 587	99 736	41
20	04 262	04 528	95 472	99 734	40
21	04 376	04 643	95 357	99 733	39
22	04 490	04 758	95 242	99 731	38
23	04 603	04 873	95 127	99 730	37
24	04 715	04 987	95 013	99 728	36
25	04 828	05 101	94 899	99 727	35
26	04 940	05 214	94 786	99 726	34
27	05 052	05 328	94 672	99 724	33
28	05 164	05 441	94 559	99 723	32
29	05 275	05 553	94 447	99 721	31
30	05 386	05 666	94 334	99 720	30
31	05 497	05 778	94 222	99 718	29
32	05 607	05 890	94 110	99 717	28
33	05 717	06 002	93 998	99 716	27
34	05 827	06 113	93 887	99 714	26
35	05 937	06 224	93 776	99 713	25
36	06 046	06 335	93 665	99 711	24
37	06 155	06 445	93 555	99 710	23
38	06 264	06 556	93 444	99 708	22
39	06 372	06 666	93 334	99 707	21
40	06 481	06 775	93 225	99 705	20
41	06 589	06 885	93 115	99 704	19
42	06 696	06 994	93 006	99 702	18
43	06 804	07 103	92 897	99 701	17
44	06 911	07 211	92 789	99 699	16
45	07 018	07 320	92 680	99 698	15
46	07 124	07 428	92 572	99 696	14
47	07 231	07 536	92 464	99 695	13
48	07 337	07 643	92 357	99 693	12
49	07 442	07 751	92 249	99 692	11
50	07 548	07 858	92 142	99 690	10
51	07 653	07 964	92 036	99 689	9
52	07 758	08 071	91 929	99 687	8
53	07 863	08 177	91 823	99 686	7
54	07 968	08 283	91 717	99 684	6
55	08 072	08 389	91 611	99 683	5
56	08 176	08 495	91 505	99 681	4
57	08 280	08 600	91 400	99 680	3
58	08 383	08 705	91 295	99 678	2
59	08 486	08 810	91 190	99 677	1
60	08 589	08 914	91 086	99 675	0
	—9—	—9—	—10—	—9—	
′	log cos	log cot	log tan	log sin	′

83°

′	log sin −9−	log tan −9−	log cot −10−	log cos −9−	′
0	08 589	08 914	91 086	99 675	60
1	08 692	09 019	90 981	99 674	59
2	08 795	09 123	90 877	99 672	58
3	08 897	09 227	90 773	99 670	57
4	08 999	09 330	90 670	99 669	56
5	09 101	09 434	90 566	99 667	55
6	09 202	09 537	90 463	99 666	54
7	09 304	09 640	90 360	99 664	53
8	09 405	09 742	90 258	99 663	52
9	09 506	09 845	90 155	99 661	51
10	09 606	09 947	90 053	99 659	50
11	09 707	10 049	89 951	99 658	49
12	09 807	10 150	89 850	99 656	48
13	09 907	10 252	89 748	99 655	47
14	10 006	10 353	89 647	99 653	46
15	10 106	10 454	89 546	99 651	45
16	10 205	10 555	89 445	99 650	44
17	10 304	10 656	89 344	99 648	43
18	10 402	10 756	89 244	99 647	42
19	10 501	10 856	89 144	99 645	41
20	10 599	10 956	89 044	99 643	40
21	10 697	11 056	88 944	99 642	39
22	10 795	11 155	88 845	99 640	38
23	10 893	11 254	88 746	99 638	37
24	10 990	11 353	88 647	99 637	36
25	11 087	11 452	88 548	99 635	35
26	11 184	11 551	88 449	99 633	34
27	11 281	11 649	88 351	99 632	33
28	11 377	11 747	88 253	99 630	32
29	11 474	11 845	88 155	99 629	31
30	11 570	11 943	88 057	99 627	30
31	11 666	12 040	87 960	99 625	29
32	11 761	12 138	87 862	99 624	28
33	11 857	12 235	87 765	99 622	27
34	11 952	12 332	87 668	99 620	26
35	12 047	12 428	87 572	99 618	25
36	12 142	12 525	87 475	99 617	24
37	12 236	12 621	87 379	99 615	23
38	12 331	12 717	87 283	99 613	22
39	12 425	12 813	87 187	99 612	21
40	12 519	12 909	87 091	99 610	20
41	12 612	13 004	86 996	99 608	19
42	12 706	13 099	86 901	99 607	18
43	12 799	13 194	86 806	99 605	17
44	12 892	13 289	86 711	99 603	16
45	12 985	13 384	86 616	99 601	15
46	13 078	13 478	86 522	99 600	14
47	13 171	13 573	86 427	99 598	13
48	13 263	13 667	86 333	99 596	12
49	13 355	13 761	86 239	99 595	11
50	13 447	13 854	86 146	99 593	10
51	13 539	13 948	86 052	99 591	9
52	13 630	14 041	85 959	99 589	8
53	13 722	14 134	85 866	99 588	7
54	13 813	14 227	85 773	99 586	6
55	13 904	14 320	85 680	99 584	5
56	13 994	14 412	85 588	99 582	4
57	14 085	14 504	85 496	99 581	3
58	14 175	14 597	85 403	99 579	2
59	14 266	14 688	85 312	99 577	1
60	14 356	14 780	85 220	99 575	0
′	log cos −9−	log cot −9−	log tan −10−	log sin −9−	′

′	log sin −9−	log tan −9−	log cot −10−	log cos −9−	′
0	14 356	14 780	85 220	99 575	60
1	14 445	14 872	85 128	99 574	59
2	14 535	14 963	85 037	99 572	58
3	14 624	15 054	84 946	99 570	57
4	14 714	15 145	84 855	99 568	56
5	14 803	15 236	84 764	99 566	55
6	14 891	15 327	84 673	99 565	54
7	14 980	15 417	84 583	99 563	53
8	15 069	15 508	84 492	99 561	52
9	15 157	15 598	84 402	99 559	51
10	15 245	15 688	84 312	99 557	50
11	15 333	15 777	84 223	99 556	49
12	15 421	15 867	84 133	99 554	48
13	15 508	15 956	84 044	99 552	47
14	15 596	16 046	83 954	99 550	46
15	15 683	16 135	83 865	99 548	45
16	15 770	16 224	83 776	99 546	44
17	15 857	16 312	83 688	99 545	43
18	15 944	16 401	83 599	99 543	42
19	16 030	16 489	83 511	99 541	41
20	16 116	16 577	83 423	99 539	40
21	16 203	16 665	83 335	99 537	39
22	16 289	16 753	83 247	99 535	38
23	16 374	16 841	83 159	99 533	37
24	16 460	16 928	83 072	99 532	36
25	16 545	17 016	82 984	99 530	35
26	16 631	17 103	82 897	99 528	34
27	16 716	17 190	82 810	99 526	33
28	16 801	17 277	82 723	99 524	32
29	16 886	17 363	82 637	99 522	31
30	16 970	17 450	82 550	99 520	30
31	17 055	17 536	82 464	99 518	29
32	17 139	17 622	82 378	99 517	28
33	17 223	17 708	82 292	99 515	27
34	17 307	17 794	82 206	99 513	26
35	17 391	17 880	82 120	99 511	25
36	17 474	17 965	82 035	99 509	24
37	17 558	18 051	81 949	99 507	23
38	17 641	18 136	81 864	99 505	22
39	17 724	18 221	81 779	99 503	21
40	17 807	18 306	81 694	99 501	20
41	17 890	18 391	81 609	99 499	19
42	17 973	18 475	81 525	99 497	18
43	18 055	18 560	81 440	99 495	17
44	18 137	18 644	81 356	99 494	16
45	18 220	18 728	81 272	99 492	15
46	18 302	18 812	81 188	99 490	14
47	18 383	18 896	81 104	99 488	13
48	18 465	18 979	81 021	99 486	12
49	18 547	19 063	80 937	99 484	11
50	18 628	19 146	80 854	99 482	10
51	18 709	19 229	80 771	99 480	9
52	18 790	19 312	80 688	99 478	8
53	18 871	19 395	80 605	99 476	7
54	18 952	19 478	80 522	99 474	6
55	19 033	19 561	80 439	99 472	5
56	19 113	19 643	80 357	99 470	4
57	19 193	19 725	80 275	99 468	3
58	19 273	19 807	80 193	99 466	2
59	19 353	19 889	80 111	99 464	1
60	19 433	19 971	80 029	99 462	0
′	log cos −9−	log cot −9−	log tan −10−	log sin −9−	′

′	log sin −9	log tan −9	log cot −10	log cos −9	′
0	19 433	19 971	80 029	99 462	60
1	19 513	20 053	79 947	99 460	59
2	19 592	20 134	79 866	99 458	58
3	19 672	20 216	79 784	99 456	57
4	19 751	20 297	79 703	99 454	56
5	19 830	20 378	79 622	99 452	55
6	19 909	20 459	79 541	99 450	54
7	19 988	20 540	79 460	99 448	53
8	20 067	20 621	79 379	99 446	52
9	20 145	20 701	79 299	99 444	51
10	20 223	20 782	79 218	99 442	50
11	20 302	20 862	79 138	99 440	49
12	20 380	20 942	79 058	99 438	48
13	20 458	21 022	78 978	99 436	47
14	20 535	21 102	78 898	99 434	46
15	20 613	21 182	78 818	99 432	45
16	20 691	21 261	78 739	99 429	44
17	20 768	21 341	78 659	99 427	43
18	20 845	21 420	78 580	99 425	42
19	20 922	21 499	78 501	99 423	41
20	20 999	21 578	78 422	99 421	40
21	21 076	21 657	78 343	99 419	39
22	21 153	21 736	78 264	99 417	38
23	21 229	21 814	78 186	99 415	37
24	21 306	21 893	78 107	99 413	36
25	21 382	21 971	78 029	99 411	35
26	21 458	22 049	77 951	99 409	34
27	21 534	22 127	77 873	99 407	33
28	21 610	22 205	77 795	99 404	32
29	21 685	22 283	77 717	99 402	31
30	21 761	22 361	77 639	99 400	30
31	21 836	22 438	77 562	99 398	29
32	21 912	22 516	77 484	99 396	28
33	21 987	22 593	77 407	99 394	27
34	22 062	22 670	77 330	99 392	26
35	22 137	22 747	77 253	99 390	25
36	22 211	22 824	77 176	99 388	24
37	22 286	22 901	77 099	99 385	23
38	22 361	22 977	77 023	99 383	22
39	22 435	23 054	76 946	99 381	21
40	22 509	23 130	76 870	99 379	20
41	22 583	23 206	76 794	99 377	19
42	22 657	23 283	76 717	99 375	18
43	22 731	23 359	76 641	99 372	17
44	22 805	23 435	76 565	99 370	16
45	22 878	23 510	76 490	99 368	15
46	22 952	23 586	76 414	99 366	14
47	23 025	23 661	76 339	99 364	13
48	23 098	23 737	76 263	99 362	12
49	23 171	23 812	76 188	99 359	11
50	23 244	23 887	76 113	99 357	10
51	23 317	23 962	76 038	99 355	9
52	23 390	24 037	75 963	99 353	8
53	23 462	24 112	75 888	99 351	7
54	23 535	24 186	75 814	99 348	6
55	23 607	24 261	75 739	99 346	5
56	23 679	24 335	75 665	99 344	4
57	23 752	24 410	75 590	99 342	3
58	23 823	24 484	75 516	99 340	2
59	23 895	24 558	75 442	99 337	1
60	23 967	24 632	75 368	99 335	0
′	log cos −9	log cot −9	log tan −10	log sin −9	′

′	log sin −9	log tan −9	log cot −10	log cos −9	′
0	23 967	24 632	75 368	99 335	60
1	24 039	24 706	75 294	99 333	59
2	24 110	24 779	75 221	99 331	58
3	24 181	24 853	75 147	99 328	57
4	24 253	24 926	75 074	99 326	56
5	24 324	25 000	75 000	99 324	55
6	24 395	25 073	74 927	99 322	54
7	24 466	25 146	74 854	99 319	53
8	24 536	25 219	74 781	99 317	52
9	24 607	25 292	74 708	99 315	51
10	24 677	25 365	74 635	99 313	50
11	24 748	25 437	74 563	99 310	49
12	24 818	25 510	74 490	99 308	48
13	24 888	25 582	74 418	99 306	47
14	24 958	25 655	74 345	99 304	46
15	25 028	25 727	74 273	99 301	45
16	25 098	25 799	74 201	99 299	44
17	25 168	25 871	74 129	99 297	43
18	25 237	25 943	74 057	99 294	42
19	25 307	26 015	73 985	99 292	41
20	25 376	26 086	73 914	99 290	40
21	25 445	26 158	73 842	99 288	39
22	25 514	26 229	73 771	99 285	38
23	25 583	26 301	73 699	99 283	37
24	25 652	26 372	73 628	99 281	36
25	25 721	26 443	73 557	99 278	35
26	25 790	26 514	73 486	99 276	34
27	25 858	26 585	73 415	99 274	33
28	25 927	26 655	73 345	99 271	32
29	25 995	26 726	73 274	99 269	31
30	26 063	26 797	73 203	99 267	30
31	26 131	26 867	73 133	99 264	29
32	26 199	26 937	73 063	99 262	28
33	26 267	27 008	72 992	99 260	27
34	26 335	27 078	72 922	99 257	26
35	26 403	27 148	72 852	99 255	25
36	26 470	27 218	72 782	99 252	24
37	26 538	27 288	72 712	99 250	23
38	26 605	27 357	72 643	99 248	22
39	26 672	27 427	72 573	99 245	21
40	26 739	27 496	72 504	99 243	20
41	26 806	27 566	72 434	99 241	19
42	26 873	27 635	72 365	99 238	18
43	26 940	27 704	72 296	99 236	17
44	27 007	27 773	72 227	99 233	16
45	27 073	27 842	72 158	99 231	15
46	27 140	27 911	72 089	99 229	14
47	27 206	27 980	72 020	99 226	13
48	27 273	28 049	71 951	99 224	12
49	27 339	28 117	71 883	99 221	11
50	27 405	28 186	71 814	99 219	10
51	27 471	28 254	71 746	99 217	9
52	27 537	28 323	71 677	99 214	8
53	27 602	28 391	71 609	99 212	7
54	27 668	28 459	71 541	99 209	6
55	27 734	28 527	71 473	99 207	5
56	27 799	28 595	71 405	99 204	4
57	27 864	28 662	71 338	99 202	3
58	27 930	28 730	71 270	99 200	2
59	27 995	28 798	71 202	99 197	1
60	28 060	28 865	71 135	99 195	0
′	log cos −9	log cot −9	log tan −10	log sin −9	′

'	log sin -9-	log tan -9-	log cot -10-	log cos -9-	'
0	28 060	28 865	71 135	99 195	60
1	28 125	28 933	71 067	99 192	59
2	28 190	29 000	71 000	99 190	58
3	28 254	29 067	70 933	99 187	57
4	28 319	29 134	70 866	99 185	56
5	28 384	29 201	70 799	99 182	55
6	28 448	29 268	70 732	99 180	54
7	28 512	29 335	70 665	99 177	53
8	28 577	29 402	70 598	99 175	52
9	28 641	29 468	70 532	99 172	51
10	28 705	29 535	70 465	99 170	50
11	28 769	29 601	70 399	99 167	49
12	28 833	29 668	70 332	99 165	48
13	28 896	29 734	70 266	99 162	47
14	28 960	29 800	70 200	99 160	46
15	29 024	29 866	70 134	99 157	45
16	29 087	29 932	70 068	99 155	44
17	29 150	29 998	70 002	99 152	43
18	29 214	30 064	69 936	99 150	42
19	29 277	30 130	69 870	99 147	41
20	29 340	30 195	69 805	99 145	40
21	29 403	30 261	69 739	99 142	39
22	29 466	30 326	69 674	99 140	38
23	29 529	30 391	69 609	99 137	37
24	29 591	30 457	69 543	99 135	36
25	29 654	30 522	69 478	99 132	35
26	29 716	30 587	69 413	99 130	34
27	29 779	30 652	69 348	99 127	33
28	29 841	30 717	69 283	99 124	32
29	29 903	30 782	69 218	99 122	31
30	29 966	30 846	69 154	99 119	30
31	30 028	30 911	69 089	99 117	29
32	30 090	30 975	69 025	99 114	28
33	30 151	31 040	68 960	99 112	27
34	30 213	31 104	68 896	99 109	26
35	30 275	31 168	68 832	99 106	25
36	30 336	31 233	68 767	99 104	24
37	30 398	31 297	68 703	99 101	23
38	30 459	31 361	68 639	99 099	22
39	30 521	31 425	68 575	99 096	21
40	30 582	31 489	68 511	99 093	20
41	30 643	31 552	68 448	99 091	19
42	30 704	31 616	68 384	99 088	18
43	30 765	31 679	68 321	99 086	17
44	30 826	31 743	68 257	99 083	16
45	30 887	31 806	68 194	99 080	15
46	30 947	31 870	68 130	99 078	14
47	31 008	31 933	68 067	99 075	13
48	31 068	31 996	68 004	99 072	12
49	31 129	32 059	67 941	99 070	11
50	31 189	32 122	67 878	99 067	10
51	31 250	32 185	67 815	99 064	9
52	31 310	32 248	67 752	99 062	8
53	31 370	32 311	67 689	99 059	7
54	31 430	32 373	67 627	99 056	6
55	31 490	32 436	67 564	99 054	5
56	31 549	32 498	67 502	99 051	4
57	31 609	32 561	67 439	99 048	3
58	31 669	32 623	67 377	99 046	2
59	31 728	32 685	67 315	99 043	1
60	31 788	32 747	67 253	99 040	0
'	log cos -9-	log cot -9-	log tan -10-	log sin -9-	'

'	log sin -9-	log tan -9-	log cot -10-	log cos -9-	'
0	31 788	32 747	67 253	99 040	60
1	31 847	32 810	67 190	99 038	59
2	31 907	32 872	67 128	99 035	58
3	31 966	32 933	67 067	99 032	57
4	32 025	32 995	67 005	99 030	56
5	32 084	33 057	66 943	99 027	55
6	32 143	33 119	66 881	99 024	54
7	32 202	33 180	66 820	99 022	53
8	32 261	33 242	66 758	99 019	52
9	32 319	33 303	66 697	99 016	51
10	32 378	33 365	66 635	99 013	50
11	32 437	33 426	66 574	99 011	49
12	32 495	33 487	66 513	99 008	48
13	32 553	33 548	66 452	99 005	47
14	32 612	33 609	66 391	99 002	46
15	32 670	33 670	66 330	99 000	45
16	32 728	33 731	66 269	98 997	44
17	32 786	33 792	66 208	98 994	43
18	32 844	33 853	66 147	98 991	42
19	32 902	33 913	66 087	98 989	41
20	32 960	33 974	66 026	98 986	40
21	33 018	34 034	65 966	98 983	39
22	33 075	34 095	65 905	98 980	38
23	33 133	34 155	65 845	98 978	37
24	33 190	34 215	65 785	98 975	36
25	33 248	34 276	65 724	98 972	35
26	33 305	34 336	65 664	98 969	34
27	33 362	34 396	65 604	98 967	33
28	33 420	34 456	65 544	98 964	32
29	33 477	34 516	65 484	98 961	31
30	33 534	34 576	65 424	98 958	30
31	33 591	34 635	65 365	98 955	29
32	33 647	34 695	65 305	98 953	28
33	33 704	34 755	65 245	98 950	27
34	33 761	34 814	65 186	98 947	26
35	33 818	34 874	65 126	98 944	25
36	33 874	34 933	65 067	98 941	24
37	33 931	34 992	65 008	98 938	23
38	33 987	35 051	64 949	98 936	22
39	34 043	35 111	64 889	98 933	21
40	34 100	35 170	64 830	98 930	20
41	34 156	35 229	64 771	98 927	19
42	34 212	35 288	64 712	98 924	18
43	34 268	35 347	64 653	98 921	17
44	34 324	35 405	64 595	98 919	16
45	34 380	35 464	64 536	98 916	15
46	34 436	35 523	64 477	98 913	14
47	34 491	35 581	64 419	98 910	13
48	34 547	35 640	64 360	98 907	12
49	34 602	35 698	64 302	98 904	11
50	34 658	35 757	64 243	98 901	10
51	34 713	35 815	64 185	98 898	9
52	34 769	35 873	64 127	98 896	8
53	34 824	35 931	64 069	98 893	7
54	34 879	35 989	64 011	98 890	6
55	34 934	36 047	63 953	98 887	5
56	34 989	36 105	63 895	98 884	4
57	35 044	36 163	63 837	98 881	3
58	35 099	36 221	63 779	98 878	2
59	35 154	36 279	63 721	98 875	1
60	35 209	36 336	63 664	98 872	0
'	log cos -9-	log cot -9-	log tan -10-	log sin -9-	'

13°

′	log sin 9—	log tan 9—	log oot —10—	log cos 9—	′
0	35 209	36 336	63 664	98 872	60
1	35 263	36 394	63 606	98 869	59
2	35 318	36 452	63 548	98 867	58
3	35 373	36 509	63 491	98 864	57
4	35 427	36 566	63 434	98 861	56
5	35 481	36 624	63 376	98 858	55
6	35 536	36 681	63 319	98 855	54
7	35 590	36 738	63 262	98 852	53
8	35 644	36 795	63 205	98 849	52
9	35 698	36 852	63 148	98 846	51
10	35 752	36 909	63 091	98 843	50
11	35 806	36 966	63 034	98 840	49
12	35 860	37 023	62 977	98 837	48
13	35 914	37 080	62 920	98 834	47
14	35 968	37 137	62 863	98 831	46
15	36 022	37 193	62 807	98 828	45
16	36 075	37 250	62 750	98 825	44
.17	36 129	37 306	62 694	98 822	43
18	36 182	37 363	62 637	98 819	42
19	36 236	37 419	62 581	98 816	41
20	36 289	37 476	62 524	98 813	40
21	36 342	37 532	62 468	98 810	39
22	36 395	37 588	62 412	98 807	38
23	36 449	37 644	62 356	98 804	37
24	36 502	37 700	62 300	98 801	36
25	36 555	37 756	62 244	98 798	35
26	36 608	37 812	62 188	98 795	34
27	36 660	37 868	62 132	98 792	33
28	36 713	37 924	62 076	98 789	32
29	36 766	37 980	62 020	98 786	31
30	36 819	38 035	61 965	98 783	30
31	36 871	38 091	61 909	98 780	29
32	36 924	38 147	61 853	98 777	28
33	36 976	38 202	61 798	98 774	27
34	37 028	38 257	61 743	98 771	26
35	37 081	38 313	61 687	98 768	25
36	37 133	38 368	61 632	98 765	24
37	37 185	38 423	61 577	98 762	23
38	37 237	38 479	61 521	98 759	22
39	37 289	38 534	61 466	98 756	21
40	37 341	38 589	61 411	98 753	20
41	37 393	38 644	61 356	98 750	19
42	37 445	38 699	61 301	98 746	18
43	37 497	38 754	61 246	98 743	17
44	37 549	38 808	61 192	98 740	16
45	37 600	38 863	61 137	98 737	15
46	37 652	38 918	61 082	98 734	14
47	37 703	38 972	61 028	98 731	13
48	37 755	39 027	60 973	98 728	12
49	37 806	39 082	60 918	98 725	11
50	37 858	39 136	60 864	98 722	10
51	37 909	39 190	60 810	98 719	9
52	37 960	39 245	60 755	98 715	8
53	38 011	39 299	60 701	98 712	7
54	38 062	39 353	60 647	98 709	6
55	38 113	39 407	60 593	98 706	5
56	38 164	39 461	60 539	98 703	4
57	38 215	39 515	60 485	98 700	3
58	38 266	39 569	60 431	98 697	2
59	38 317	39 623	60 377	98 694	1
60	38 368	39 677	60 323	98 690	0
′	log cos 9—	log oot 9—	log tan —10—	log sin 9—	′

76°

14°

′	log sin 9—	log tan 9—	log oot —10—	log cos 9—	′
0	38 368	39 677	60 323	98 690	60
1	38 418	39 731	60 269	98 687	59
2	38 469	39 785	60 215	98 684	58
3	38 519	39 838	60 162	98 681	57
4	38 570	39 892	60 108	98 678	56
5	38 620	39 945	60 055	98 675	55
6	38 670	39 999	60 001	98 671	54
7	38 721	40 052	59 948	98 668	53
8	38 771	40 106	59 894	98 665	52
9	38 821	40 159	59 841	98 662	51
10	38 871	40 212	59 788	98 659	50
11	38 921	40 266	59 734	98 656	49
12	38 971	40 319	59 681	98 652	48
13	39 021	40 372	59 628	98 649	47
14	39 071	40 425	59 575	98 646	46
15	39 121	40 478	59 522	98 643	45
16	39 170	40 531	59 469	98 640	44
17	39 220	40 584	59 416	98 636	43
18	39 270	40 636	59 364	98 633	42
19	39 319	40 689	59 311	98 630	41
20	39 369	40 742	59 258	98 627	40
21	39 418	40 795	59 205	98 623	39
22	39 467	40 847	59 153	98 620	38
23	39 517	40 900	59 100	98 617	37
24	39 566	40 952	59 048	98 614	36
25	39 615	41 005	58 995	98 610	35
26	39 664	41 057	58 943	98 607	34
27	39 713	41 109	58 891	98 604	33
28	39 762	41 161	58 839	98 601	32
29	39 811	41 214	58 786	98 597	31
30	39 860	41 266	58 734	98 594	30
31	39 909	41 318	58 682	98 591	29
32	39 958	41 370	58 630	98 588	28
33	40 006	41 422	58 578	98 584	27
34	40 055	41 474	58 526	98 581	26
35	40 103	41 526	58 474	98 578	25
36	40 152	41 578	58 422	98 574	24
37	40 200	41 629	58 371	98 571	23
38	40 249	41 681	58 319	98 568	22
39	40 297	41 733	58 267	98 565	21
40	40 346	41 784	58 216	98 561	20
41	40 394	41 836	58 164	98 558	19
42	40 442	41 887	58 113	98 555	18
43	40 490	41 939	58 061	98 551	17
44	40 538	41 990	58 010	98 548	16
45	40 586	42 041	57 959	98 545	15
46	40 634	42 093	57 907	98 541	14
47	40 682	42 144	57 856	98 538	13
48	40 730	42 195	57 805	98 535	12
49	40 778	42 246	57 754	98 531	11
50	40 825	42 297	57 703	98 528	10
51	40 873	42 348	57 652	98 525	9
52	40 921	42 399	57 601	98 521	8
53	40 968	42 450	57 550	98 518	7
54	41 016	42 501	57 499	98 515	6
55	41 063	42 552	57 448	98 511	5
56	41 111	42 603	57 397	98 508	4
57	41 158	42 653	57 347	98 505	3
58	41 205	42 704	57 296	98 501	2
59	41 252	42 755	57 245	98 498	1
60	41 300	42 805	57 195	98 494	0
′	log cos 9—	log oot 9—	log tan —10—	log sin 9—	′

75°

15°

'	log sin	log tan	log cot	log cos	'
	9	9	10	9	
0	41 300	42 805	57 195	98 494	60
1	41 347	42 856	57 144	98 491	59
2	41 394	42 906	57 094	98 488	58
3	41 441	42 957	57 043	98 484	57
4	41 488	43 007	56 993	98 481	56
5	41 535	43 057	56 943	98 477	55
6	41 582	43 108	56 892	98 474	54
7	41 628	43 158	56 842	98 471	53
8	41 675	43 208	56 792	98 467	52
9	41 722	43 258	56 742	98 464	51
10	41 768	43 308	56 692	98 460	50
11	41 815	43 358	56 642	98 457	49
12	41 861	43 408	56 592	98 453	48
13	41 908	43 458	56 542	98 450	47
14	41 954	43 508	56 492	98 447	46
15	42 001	43 558	56 442	98 443	45
16	42 047	43 607	56 393	98 440	44
17	42 093	43 657	56 343	98 436	43
18	42 140	43 707	56 293	98 433	42
19	42 186	43 756	56 244	98 429	41
20	42 232	43 806	56 194	98 426	40
21	42 278	43 855	56 145	98 422	39
22	42 324	43 905	56 095	98 419	38
23	42 370	43 954	56 046	98 415	37
24	42 416	44 004	55 996	98 412	36
25	42 461	44 053	55 947	98 409	35
26	42 507	44 102	55 898	98 405	34
27	42 553	44 151	55 849	98 402	33
28	42 599	44 201	55 799	98 398	32
29	42 644	44 250	55 750	98 395	31
30	42 690	44 299	55 701	98 391	30
31	42 735	44 348	55 652	98 388	29
32	42 781	44 397	55 603	98 384	28
33	42 826	44 446	55 554	98 381	27
34	42 872	44 495	55 505	98 377	26
35	42 917	44 544	55 456	98 373	25
36	42 962	44 592	55 408	98 370	24
37	43 008	44 641	55 359	98 366	23
38	43 053	44 690	55 310	98 363	22
39	43 098	44 738	55 262	98 359	21
40	43 143	44 787	55 213	98 356	20
41	43 188	44 836	55 164	98 352	19
42	43 233	44 884	55 116	98 349	18
43	43 278	44 933	55 067	98 345	17
44	43 323	44 981	55 019	98 342	16
45	43 367	45 029	54 971	98 338	15
46	43 412	45 078	54 922	98 334	14
47	43 457	45 126	54 874	98 331	13
48	43 502	45 174	54 826	98 327	12
49	43 546	45 222	54 778	98 324	11
50	43 591	45 271	54 729	98 320	10
51	43 635	45 319	54 681	98 317	9
52	43 680	45 367	54 633	98 313	8
53	43 724	45 415	54 585	98 309	7
54	43 769	45 463	54 537	98 306	6
55	43 813	45 511	54 489	98 302	5
56	43 857	45 559	54 441	98 299	4
57	43 901	45 606	54 394	98 295	3
58	43 946	45 654	54 346	98 291	2
59	43 990	45 702	54 298	98 288	1
60	44 034	45 750	54 250	98 284	0
	9	9	10	9	
'	log cos	log cot	log tan	log sin	'

16°

'	log sin	log tan	log cot	log cos	'
	9	9	10	9	
0	44 034	45 750	54 250	98 284	60
1	44 078	45 797	54 203	98 281	59
2	44 122	45 845	54 155	98 277	58
3	44 166	45 892	54 108	98 273	57
4	44 210	45 940	54 060	98 270	56
5	44 253	45 987	54 013	98 266	55
6	44 297	46 035	53 965	98 262	54
7	44 341	46 082	53 918	98 259	53
8	44 385	46 130	53 870	98 255	52
9	44 428	46 177	53 823	98 251	51
10	44 472	46 224	53 776	98 248	50
11	44 516	46 271	53 729	98 244	49
12	44 559	46 319	53 681	98 240	48
13	44 602	46 366	53 634	98 237	47
14	44 646	46 413	53 587	98 233	46
15	44 689	46 460	53 540	98 229	45
16	44 733	46 507	53 493	98 226	44
17	44 776	46 554	53 446	98 222	43
18	44 819	46 601	53 399	98 218	42
19	44 862	46 648	53 352	98 215	41
20	44 905	46 694	53 306	98 211	40
21	44 948	46 741	53 259	98 207	39
22	44 992	46 788	53 212	98 204	38
23	45 035	46 835	53 165	98 200	37
24	45 077	46 881	53 119	98 196	36
25	45 120	46 928	53 072	98 192	35
26	45 163	46 975	53 025	98 189	34
27	45 206	47 021	52 979	98 185	33
28	45 249	47 068	52 932	98 181	32
29	45 292	47 114	52 886	98 177	31
30	45 334	47 160	52 840	98 174	30
31	45 377	47 207	52 793	98 170	29
32	45 419	47 253	52 747	98 166	28
33	45 462	47 299	52 701	98 162	27
34	45 504	47 346	52 654	98 159	26
35	45 547	47 392	52 608	98 155	25
36	45 589	47 438	52 562	98 151	24
37	45 632	47 484	52 516	98 147	23
38	45 674	47 530	52 470	98 144	22
39	45 716	47 576	52 424	98 140	21
40	45 758	47 622	52 378	98 136	20
41	45 801	47 668	52 332	98 132	19
42	45 843	47 714	52 286	98 129	18
43	45 885	47 760	52 240	98 125	17
44	45 927	47 806	52 194	98 121	16
45	45 969	47 852	52 148	98 117	15
46	46 011	47 897	52 103	98 113	14
47	46 053	47 943	52 057	98 110	13
48	46 095	47 989	52 011	98 106	12
49	46 136	48 035	51 965	98 102	11
50	46 178	48 080	51 920	98 098	10
51	46 220	48 126	51 874	98 094	9
52	46 262	48 171	51 829	98 090	8
53	46 303	48 217	51 783	98 087	7
54	46 345	48 262	51 738	98 083	6
55	46 386	48 307	51 693	98 079	5
56	46 428	48 353	51 647	98 075	4
57	46 469	48 398	51 602	98 071	3
58	46 511	48 443	51 557	98 067	2
59	46 552	48 489	51 511	98 063	1
60	46 594	48 534	51 466	98 060	0
	9	9	10	9	
'	log cos	log cot	log tan	log sin	'

17°   18°

′	log sin 9—	log tan 9—	log cot —10—	log cos 9—	′	′	log sin 9—	log tan 9—	log cot —10—	log cos 9—	′
0	46 594	48 534	51 466	98 060	60	0	48 998	51 178	48 822	97 821	60
1	46 635	48 579	51 421	98 056	59	1	49 037	51 221	48 779	97 817	59
2	46 676	48 624	51 376	98 052	58	2	49 076	51 264	48 736	97 812	58
3	46 717	48 669	51 331	98 048	57	3	49 115	51 306	48 694	97 808	57
4	46 758	48 714	51 286	98 044	56	4	49 153	51 349	48 651	97 804	56
5	46 800	48 759	51 241	98 040	55	5	49 192	51 392	48 608	97 800	55
6	46 841	48 804	51 196	98 036	54	6	49 231	51 435	48 565	97 796	54
7	46 882	48 849	51 151	98 032	53	7	49 269	51 478	48 522	97 792	53
8	46 923	48 894	51 106	98 029	52	8	49 308	51 520	48 480	97 788	52
9	46 964	48 939	51 061	98 025	51	9	49 347	51 563	48 437	97 784	51
10	47 005	48 984	51 016	98 021	50	10	49 385	51 606	48 394	97 779	50
11	47 045	49 029	50 971	98 017	49	11	49 424	51 648	48 352	97 775	49
12	47 086	49 073	50 927	98 013	48	12	49 462	51 691	48 309	97 771	48
13	47 127	49 118	50 882	98 009	47	13	49 500	51 734	48 266	97 767	47
14	47 168	49 163	50 837	98 005	46	14	49 539	51 776	48 224	97 763	46
15	47 209	49 207	50 793	98 001	45	15	49 577	51 819	48 181	97 759	45
16	47 249	49 252	50 748	97 997	44	16	49 615	51 861	48 139	97 754	44
17	47 290	49 296	50 704	97 993	43	17	49 654	51 903	48 097	97 750	43
18	47 330	49 341	50 659	97 989	42	18	49 692	51 946	48 054	97 746	42
19	47 371	49 385	50 615	97 986	41	19	49 730	51 988	48 012	97 742	41
20	47 411	49 430	50 570	97 982	40	20	49 768	52 031	47 969	97 738	40
21	47 452	49 474	50 526	97 978	39	21	49 806	52 073	47 927	97 734	39
22	47 492	49 519	50 481	97 974	38	22	49 844	52 115	47 885	97 729	38
23	47 533	49 563	50 437	97 970	37	23	49 882	52 157	47 843	97 725	37
24	47 573	49 607	50 393	97 966	36	24	49 920	52 200	47 800	97 721	36
25	47 613	49 652	50 348	97 962	35	25	49 958	52 242	47 758	97 717	35
26	47 654	49 696	50 304	97 958	34	26	49 996	52 284	47 716	97 713	34
27	47 694	49 740	50 260	97 954	33	27	50 034	52 326	47 674	97 708	33
28	47 734	49 784	50 216	97 950	32	28	50 072	52 368	47 632	97 704	32
29	47 774	49 828	50 172	97 946	31	29	50 110	52 410	47 590	97 700	31
30	47 814	49 872	50 128	97 942	30	30	50 148	52 452	47 548	97 696	30
31	47 854	49 916	50 084	97 938	29	31	50 185	52 494	47 506	97 691	29
32	47 894	49 960	50 040	97 934	28	32	50 223	52 536	47 464	97 687	28
33	47 934	50 004	49 996	97 930	27	33	50 261	52 578	47 422	97 683	27
34	47 974	50 048	49 952	97 926	26	34	50 298	52 620	47 380	97 679	26
35	48 014	50 092	49 908	97 922	25	35	50 336	52 661	47 339	97 674	25
36	48 054	50 136	49 864	97 918	24	36	50 374	52 703	47 297	97 670	24
37	48 094	50 180	49 820	97 914	23	37	50 411	52 745	47 255	97 666	23
38	48 133	50 223	49 777	97 910	22	38	50 449	52 787	47 213	97 662	22
39	48 173	50 267	49 733	97 906	21	39	50 486	52 829	47 171	97 657	21
40	48 213	50 311	49 689	97 902	20	40	50 523	52 870	47 130	97 653	20
41	48 252	50 355	49 645	97 898	19	41	50 561	52 912	47 088	97 649	19
42	48 292	50 398	49 602	97 894	18	42	50 598	52 953	47 047	97 645	18
43	48 332	50 442	49 558	97 890	17	43	50 635	52 995	47 005	97 640	17
44	48 371	50 485	49 515	97 886	16	44	50 673	53 037	46 963	97 636	16
45	48 411	50 529	49 471	97 882	15	45	50 710	53 078	46 922	97 632	15
46	48 450	50 572	49 428	97 878	14	46	50 747	53 120	46 880	97 628	14
47	48 490	50 616	49 384	97 874	13	47	50 784	53 161	46 839	97 623	13
48	48 529	50 659	49 341	97 870	12	48	50 821	53 202	46 798	97 619	12
49	48 568	50 703	49 297	97 866	11	49	50 858	53 244	46 756	97 615	11
50	48 607	50 746	49 254	97 861	10	50	50 896	53 285	46 715	97 610	10
51	48 647	50 789	49 211	97 857	9	51	50 933	53 327	46 673	97 606	9
52	48 686	50 833	49 167	97 853	8	52	50 970	53 368	46 632	97 602	8
53	48 725	50 876	49 124	97 849	7	53	51 007	53 409	46 591	97 597	7
54	48 764	50 919	49 081	97 845	6	54	51 043	53 450	46 550	97 593	6
55	48 803	50 962	49 038	97 841	5	55	51 080	53 492	46 508	97 589	5
56	48 842	51 005	48 995	97 837	4	56	51 117	53 533	46 467	97 584	4
57	48 881	51 048	48 952	97 833	3	57	51 154	53 574	46 426	97 580	3
58	48 920	51 092	48 908	97 829	2	58	51 191	53 615	46 385	97 576	2
59	48 959	51 135	48 865	97 825	1	59	51 227	53 656	46 344	97 571	1
60	48 998	51 178	48 822	97 821	0	60	51 264	53 697	46 303	97 567	0
′	log cos .9	log cot 9	log tan —10—	log sin 9	′	′	log cos 9—	log cot 9—	log tan —10—	log sin 9—	′

72°   71°

19° 20°

'	log sin	log tan	log cot	log cos	'
	-9	-9	-10	-9	
0	51 264	53 697	46 303	97 567	60
1	51 301	53 738	46 262	97 563	59
2	51 338	53 779	46 221	97 558	58
3	51 374	53 820	46 180	97 554	57
4	51 411	53 861	46 139	97 55?	56
5	51 447	53 902	46 098	97 545	55
6	51 484	53 943	46 057	97 541	54
7	51 520	53 984	46 016	97 536	53
8	51 557	54 025	45 975	97 532	52
9	51 593	54 065	45 935	97 528	51
10	51 629	54 106	45 894	97 523	50
11	51 666	54 147	45 853	97 519	49
12	51 702	54 187	45 813	97 515	48
13	51 738	54 228	45 772	97 510	47
14	51 774	54 269	45 731	97 506	46
15	51 811	54 309	45 691	97 501	45
16	51 847	54 350	45 650	97 497	44
17	51 883	54 390	45 610	97 492	43
18	51 919	54 431	45 569	97 488	42
19	51 955	54 471	45 529	97 484	41
20	51 991	54 512	45 488	97 479	40
21	52 027	54 552	45 448	97 475	39
22	52 063	54 593	45 407	97 470	38
23	52 099	54 633	45 367	97 466	37
24	52 135	54 673	45 327	97 461	36
25	52 171	54 714	45 286	97 457	35
26	52 207	54 754	45 246	97 453	34
27	52 242	54 794	45 206	97 448	33
28	52 278	54 835	45 165	97 444	32
29	52 314	54 875	45 125	97 439	31
30	52 350	54 915	45 085	97 435	30
31	52 385	54 955	45 045	97 430	29
32	52 421	54 995	45 005	97 426	28
33	52 456	55 035	44 965	97 421	27
34	52 492	55 075	44 925	97 417	26
35	52 527	55 115	44 885	97 412	25
36	52 563	55 155	44 845	97 408	24
37	52 598	55 195	44 805	97 403	23
38	52 634	55 235	44 765	97 399	22
39	52 669	55 275	44 725	97 394	21
40	52 705	55 315	44 685	97 390	20
41	52 740	55 355	44 645	97 385	19
42	52 775	55 395	44 605	97 381	18
43	52 811	55 434	44 566	97 376	17
44	52 846	55 474	44 526	97 372	16
45	52 881	55 514	44 486	97 367	15
46	52 916	55 554	44 446	97 363	14
47	52 951	55 593	44 407	97 358	13
48	52 986	55 633	44 367	97 353	12
49	53 021	55 673	44 327	97 349	11
50	53 056	55 712	44 288	97 344	10
51	53 092	55 752	44 248	97 340	9
52	53 126	55 791	44 209	97 335	8
53	53 161	55 831	44 169	97 331	7
54	53 196	55 870	44 130	97 326	6
55	53 231	55 910	44 090	97 322	5
56	53 266	55 949	44 051	97 317	4
57	53 301	55 989	44 011	97 312	3
58	53 336	56 028	43 972	97 308	2
59	53 370	56 067	43 933	97 303	1
60	53 405	56 107	43 893	97 299	0
	-9	-9	-10	-9	
'	log cos	log cot	log tan	log sin	'

'	log sin	log tan	log cot	log cos	'
	-9	-9	-10	-9	
0	53 405	56 107	43 893	97 299	60
1	53 440	56 146	43 854	97 294	59
2	53 475	56 185	43 815	97 289	58
3	53 509	56 224	43 776	97 285	57
4	53 544	56 264	43 736	97 280	56
5	53 578	56 303	43 697	97 276	55
6	53 613	56 342	43 658	97 271	54
7	53 647	56 381	43 619	97 266	53
8	53 682	56 420	43 580	97 262	52
9	53 716	56 459	43 541	97 257	51
10	53 751	56 498	43 502	97 252	50
11	53 785	56 537	43 463	97 248	49
12	53 819	56 576	43 424	97 243	48
13	53 854	56 615	43 385	97 238	47
14	53 888	56 654	43 346	97 234	46
15	53 922	56 693	43 307	97 229	45
16	53 957	56 732	43 268	97 224	44
17	53 991	56 771	43 229	97 220	43
18	54 025	56 810	43 190	97 215	42
19	54 059	56 849	43 151	97 210	41
20	54 093	56 887	43 113	97 206	40
21	54 127	56 926	43 074	97 201	39
22	54 161	56 965	43 035	97 196	38
23	54 195	57 004	42 996	97 192	37
24	54 229	57 042	42 958	97 187	36
25	54 263	57 081	42 919	97 182	35
26	54 297	57 120	42 880	97 178	34
27	54 331	57 158	42 842	97 173	33
28	54 365	57 197	42 803	97 168	32
29	54 399	57 235	42 765	97 163	31
30	54 433	57 274	42 726	97 159	30
31	54 466	57 312	42 688	97 154	29
32	54 500	57 351	42 649	97 149	28
33	54 534	57 389	42 611	97 145	27
34	54 567	57 428	42 572	97 140	26
35	54 601	57 466	42 534	97 135	25
36	54 635	57 504	42 496	97 130	24
37	54 668	57 543	42 457	97 126	23
38	54 702	57 581	42 419	97 121	22
39	54 735	57 619	42 381	97 116	21
40	54 769	57 658	42 342	97 111	20
41	54 802	57 696	42 304	97 107	19
42	54 836	57 734	42 266	97 102	18
43	54 869	57 772	42 228	97 097	17
44	54 903	57 810	42 190	97 092	16
45	54 936	57 849	42 151	97 087	15
46	54 969	57 887	42 113	97 083	14
47	55 003	57 925	42 075	97 078	13
48	55 036	57 963	42 037	97 073	12
49	55 069	58 001	41 999	97 068	11
50	55 102	58 039	41 961	97 063	10
51	55 136	58 077	41 923	97 059	9
52	55 169	58 115	41 885	97 054	8
53	55 202	58 153	41 847	97 049	7
54	55 235	58 191	41 809	97 044	6
55	55 268	58 229	41 771	97 039	5
56	55 301	58 267	41 733	97 035	4
57	55 334	58 304	41 696	97 030	3
58	55 367	58 342	41 658	97 025	2
59	55 400	58 380	41 620	97 020	1
60	55 433	58 418	41 582	97 015	0
	-9	-9	-10	-9	
'	log cos	log cot	log tan	log sin	'

70° 69°

21°

′	log sin	log tan	log cot	log cos	′
	-9-	-9-	-10-	-9-	
0	55 433	58 418	41 582	97 015	60
1	55 466	58 455	41 545	97 010	59
2	55 499	58 493	41 507	97 005	58
3	55 532	58 531	41 469	97 001	57
4	55 564	58 569	41 431	96 996	56
5	55 597	58 606	41 394	96 991	55
6	55 630	58 644	41 356	96 986	54
7	55 663	58 681	41 319	96 981	53
8	55 695	58 719	41 281	96 976	52
9	55 728	58 757	41 243	96 971	51
10	55 761	58 794	41 206	96 966	50
11	55 793	58 832	41 168	96 962	49
12	55 826	58 869	41 131	96 957	48
13	55 858	58 907	41 093	96 952	47
14	55 891	58 944	41 056	96 947	46
15	55 923	58 981	41 019	96 942	45
16	55 956	59 019	40 981	96 937	44
17	55 988	59 056	40 944	96 932	43
18	56 021	59 094	40 906	96 927	42
19	56 053	59 131	40 869	96 922	41
20	56 085	59 168	40 832	96 917	40
21	56 118	59 205	40 795	96 912	39
22	56 150	59 243	40 757	96 907	38
23	56 182	59 280	40 720	96 903	37
24	56 215	59 317	40 683	96 898	36
25	56 247	59 354	40 646	96 893	35
26	56 279	59 391	40 609	96 888	34
27	56 311	59 429	40 571	96 883	33
28	56 343	59 466	40 534	96 878	32
29	56 375	59 503	40 497	96 873	31
30	56 408	59 540	40 460	96 868	30
31	56 440	59 577	40 423	96 863	29
32	56 472	59 614	40 386	96 858	28
33	56 504	59 651	40 349	96 853	27
34	56 536	59 688	40 312	96 848	26
35	56 568	59 725	40 275	96 843	25
36	56 599	59 762	40 238	96 838	24
37	56 631	59 799	40 201	96 833	23
38	56 663	59 835	40 165	96 828	22
39	56 695	59 872	40 128	96 823	21
40	56 727	59 909	40 091	96 818	20
41	56 759	59 946	40 054	96 813	19
42	56 790	59 983	40 017	96 808	18
43	56 822	60 019	39 981	96 803	17
44	56 854	60 056	39 944	96 798	16
45	56 886	60 093	39 907	96 793	15
46	56 917	60 130	39 870	96 788	14
47	56 949	60 166	39 834	96 783	13
48	56 980	60 203	39 797	96 778	12
49	57 012	60 240	39 760	96 772	11
50	57 044	60 276	39 724	96 767	10
51	57 075	60 313	39 687	96 762	9
52	57 107	60 349	39 651	96 757	8
53	57 138	60 386	39 614	96 752	7
54	57 169	60 422	39 578	96 747	6
55	57 201	60 459	39 541	96 742	5
56	57 232	60 495	39 505	96 737	4
57	57 264	60 532	39 468	96 732	3
58	57 295	60 568	39 432	96 727	2
59	57 326	60 605	39 395	96 722	1
60	57 358	60 641	39 359	96 717	0
	-9-	-9-	-10-	-9-	
′	log cos	log cot	log tan	log sin	′

68°

22°

′	log sin	log tan	log cot	log cos	′
	-9-	-9-	-10-	-9-	
0	57 358	60 641	39 359	96 717	60
1	57 389	60 677	39 323	96 711	59
2	57 420	60 714	39 286	96 706	58
3	57 451	60 750	39 250	96 701	57
4	57 482	60 786	39 214	96 696	56
5	57 514	60 823	39 177	96 691	55
6	57 545	60 859	39 141	96 686	54
7	57 576	60 895	39 105	96 681	53
8	57 607	60 931	39 069	96 676	52
9	57 638	60 967	39 033	96 670	51
10	57 669	61 004	38 996	96 665	50
11	57 700	61 040	38 960	96 660	49
12	57 731	61 076	38 924	96 655	48
13	57 762	61 112	38 888	96 650	47
14	57 793	61 148	38 852	96 645	46
15	57 824	61 184	38 816	96 640	45
16	57 855	61 220	38 780	96 634	44
17	57 885	61 256	38 744	96 629	43
18	57 916	61 292	38 708	96 624	42
19	57 947	61 328	38 672	96 619	41
20	57 978	61 364	38 636	96 614	40
21	58 008	61 400	38 600	96 608	39
22	58 039	61 436	38 564	96 603	38
23	58 070	61 472	38 528	96 598	37
24	58 101	61 508	38 492	96 593	36
25	58 131	61 544	38 456	96 588	35
26	58 162	61 579	38 421	96 582	34
27	58 192	61 615	38 385	96 577	33
28	58 223	61 651	38 349	96 572	32
29	58 253	61 687	38 313	96 567	31
30	58 284	61 722	38 278	96 562	30
31	58 314	61 758	38 242	96 556	29
32	58 345	61 794	38 206	96 551	28
33	58 375	61 830	38 170	96 546	27
34	58 406	61 865	38 135	96 541	26
35	58 436	61 901	38 099	96 535	25
36	58 467	61 936	38 064	96 530	24
37	58 497	61 972	38 028	96 525	23
38	58 527	62 008	37 992	96 520	22
39	58 557	62 043	37 957	96 514	21
40	58 588	62 079	37 921	96 509	20
41	58 618	62 114	37 886	96 504	19
42	58 648	62 150	37 850	96 498	18
43	58 678	62 185	37 815	96 493	17
44	58 709	62 221	37 779	96 488	16
45	58 739	62 256	37 744	96 483	15
46	58 769	62 292	37 708	96 477	14
47	58 799	62 327	37 673	96 472	13
48	58 829	62 362	37 638	96 467	12
49	58 859	62 398	37 602	96 461	11
50	58 889	62 433	37 567	96 456	10
51	58 919	62 468	37 532	96 451	9
52	58 949	62 504	37 496	96 445	8
53	58 979	62 539	37 461	96 440	7
54	59 009	62 574	37 426	96 435	6
55	59 039	62 609	37 391	96 429	5
56	59 069	62 645	37 355	96 424	4
57	59 098	62 680	37 320	96 419	3
58	59 128	62 715	37 285	96 413	2
59	59 158	62 750	37 250	96 408	1
60	59 188	62 785	37 215	96 403	0
	-9-	-9-	-10-	-9-	
′	log cos	log cot	log tan	log sin	′

67°

′	log sin	log tan	log cot	log cos	′
	9	9	10	9	
0	59 188	62 785	37 215	96 403	60
1	59 218	62 820	37 180	96 397	59
2	59 247	62 855	37 145	96 392	58
3	59 277	62 890	37 110	96 387	57
4	59 307	62 926	37 074	96 381	56
5	59 336	62 961	37 039	96 376	55
6	59 366	62 996	37 004	96 370	54
7	59 396	63 031	36 969	96 365	53
8	59 425	63 066	36 934	96 360	52
9	59 455	63 101	36 899	96 354	51
10	59 484	63 135	36 865	96 349	50
11	59 514	63 170	36 830	96 343	49
12	59 543	63 205	36 795	96 338	48
13	59 573	63 240	36 760	96 333	47
14	59 602	63 275	36 725	96 327	46
15	59 632	63 310	36 690	96 322	45
16	59 661	63 345	36 655	96 316	44
17	59 690	63 379	36 621	96 311	43
18	59 720	63 414	36 586	96 305	42
19	59 749	63 449	36 551	96 300	41
20	59 778	63 484	36 516	96 294	40
21	59 808	63 519	36 481	96 289	39
22	59 837	63 553	36 447	96 284	38
23	59 866	63 588	36 412	96 278	37
24	59 895	63 623	36 377	96 273	36
25	59 924	63 657	36 343	96 267	35
26	59 954	63 692	36 308	96 262	34
27	59 983	63 726	36 274	96 256	33
28	60 012	63 761	36 239	96 251	32
29	60 041	63 796	36 204	96 245	31
30	60 070	63 830	36 170	96 240	30
31	60 099	63 865	36 135	96 234	29
32	60 128	63 899	36 101	96 229	28
33	60 157	63 934	36 066	96 223	27
34	60 186	63 968	36 032	96 218	26
35	60 215	64 003	35 997	96 212	25
36	60 244	64 037	35 963	96 207	24
37	60 273	64 072	35 928	96 201	23
38	60 302	64 106	35 894	96 196	22
39	60 331	64 140	35 860	96 190	21
40	60 359	64 175	35 825	96 185	20
41	60 388	64 209	35 791	96 179	19
42	60 417	64 243	35 757	96 174	18
43	60 446	64 278	35 722	96 168	17
44	60 474	64 312	35 688	96 162	16
45	60 503	64 346	35 654	96 157	15
46	60 532	64 381	35 619	96 151	14
47	60 561	64 415	35 585	96 146	13
48	60 589	64 449	35 551	96 140	12
49	60 618	64 483	35 517	96 135	11
50	60 646	64 517	35 483	96 129	10
51	60 675	64 552	35 448	96 123	9
52	60 704	64 586	35 414	96 118	8
53	60 732	64 620	35 380	96 112	7
54	60 761	64 654	35 346	96 107	6
55	60 789	64 688	35 312	96 101	5
56	60 818	64 722	35 278	96 095	4
57	60 846	64 756	35 244	96 090	3
58	60 875	64 790	35 210	96 084	2
59	60 903	64 824	35 176	96 079	1
60	60 931	64 858	35 142	96 073	0
	9	9	10	9	
′	log cos	log cot	log tan	log sin	′

′	log sin	log tan	log cot	log cos	′
	9	9	10	9	
0	60 931	64 858	35 142	96 073	60
1	60 960	64 892	35 108	96 067	59
2	60 988	64 926	35 074	96 062	58
3	61 016	64 960	35 040	96 056	57
4	61 045	64 994	35 006	96 050	56
5	61 073	65 028	34 972	96 045	55
6	61 101	65 062	34 938	96 039	54
7	61 129	65 096	34 904	96 034	53
8	61 158	65 130	34 870	96 028	52
9	61 186	65 164	34 836	96 022	51
10	61 214	65 197	34 803	96 017	50
11	61 242	65 231	34 769	96 011	49
12	61 270	65 265	34 735	96 005	48
13	61 298	65 299	34 701	96 000	47
14	61 326	65 333	34 667	95 994	46
15	61 354	65 366	34 634	95 988	45
16	61 382	65 400	34 600	95 982	44
17	61 411	65 434	34 566	95 977	43
18	61 438	65 467	34 533	95 971	42
19	61 466	65 501	34 499	95 965	41
20	61 494	65 535	34 465	95 960	40
21	61 522	65 568	34 432	95 954	39
22	61 550	65 602	34 398	95 948	38
23	61 578	65 636	34 364	95 942	37
24	61 606	65 669	34 331	95 937	36
25	61 634	65 703	34 297	95 931	35
26	61 662	65 736	34 264	95 925	34
27	61 689	65 770	34 230	95 920	33
28	61 717	65 803	34 197	95 914	32
29	61 745	65 837	34 163	95 908	31
30	61 773	65 870	34 130	95 902	30
31	61 800	65 904	34 096	95 897	29
32	61 828	65 937	34 063	95 891	28
33	61 856	65 971	34 029	95 885	27
34	61 883	66 004	33 996	95 879	26
35	61 911	66 038	33 962	95 873	25
36	61 939	66 071	33 929	95 868	24
37	61 966	66 104	33 896	95 862	23
38	61 994	66 138	33 862	95 856	22
39	62 021	66 171	33 829	95 850	21
40	62 049	66 204	33 796	95 844	20
41	62 076	66 238	33 762	95 839	19
42	62 104	66 271	33 729	95 833	18
43	62 131	66 304	33 696	95 827	17
44	62 159	66 337	33 663	95 821	16
45	62 186	66 371	33 629	95 815	15
46	62 214	66 404	33 596	95 810	14
47	62 241	66 437	33 563	95 804	13
48	62 268	66 470	33 530	95 798	12
49	62 296	66 503	33 497	95 792	11
50	62 323	66 537	33 463	95 786	10
51	62 350	66 570	33 430	95 780	9
52	62 377	66 603	33 397	95 775	8
53	62 405	66 636	33 364	95 769	7
54	62 432	66 669	33 331	95 763	6
55	62 459	66 702	33 298	95 757	5
56	62 486	66 735	33 265	95 751	4
57	62 513	66 768	33 232	95 745	3
58	62 541	66 801	33 199	95 739	2
59	62 568	66 834	33 166	95 733	1
60	62 595	66 867	33 133	95 728	0
	9	9	10	9	
′	log cos	log cot	log tan	log sin	′

′	log sin 9	log tan 9	log cot 10	log cos 9	′		′	log sin 9	log tan 9	log cot 10	log cos 9	′
0	62 595	66 867	33 133	95 728	60		0	64 184	68 818	31 182	95 366	60
1	62 622	66 900	33 100	95 722	59		1	64 210	68 850	31 150	95 360	59
2	62 649	66 933	33 067	95 716	58		2	64 236	68 882	31 118	95 354	58
3	62 676	66 966	33 034	95 710	57		3	64 262	68 914	31 086	95 348	57
4	62 703	66 999	33 001	95 704	56		4	64 288	68 946	31 054	95 341	56
5	62 730	67 032	32 968	95 698	55		5	64 313	68 978	31 022	95 335	55
6	62 757	67 065	32 935	95 692	54		6	64 339	69 010	30 990	95 329	54
7	62 784	67 098	32 902	95 686	53		7	64 365	69 042	30 958	95 323	53
8	62 811	67 131	32 869	95 680	52		8	64 391	69 074	30 926	95 317	52
9	62 838	67 163	32 837	95 674	51		9	64 417	69 106	30 894	95 310	51
10	62 865	67 196	32 804	95 668	50		10	64 442	69 138	30 862	95 304	50
11	62 892	67 229	32 771	95 663	49		11	64 468	69 170	30 830	95 298	49
12	62 918	67 262	32 738	95 657	48		12	64 494	69 202	30 798	95 292	48
13	62 945	67 295	32 705	95 651	47		13	64 519	69 234	30 766	95 286	47
14	62 972	67 327	32 673	95 645	46		14	64 545	69 266	30 734	95 279	46
15	62 999	67 360	32 640	95 639	45		15	64 571	69 298	30 702	95 273	45
16	63 026	67 393	32 607	95 633	44		16	64 596	69 329	30 671	95 267	44
17	63 052	67 426	32 574	95 627	43		17	64 622	69 361	30 639	95 261	43
18	63 079	67 458	32 542	95 621	42		18	64 647	69 393	30 607	95 254	42
19	63 106	67 491	32 509	95 615	41		19	64 673	69 425	30 575	95 248	41
20	63 133	67 524	32 476	95 609	40		20	64 698	69 457	30 543	95 242	40
21	63 159	67 556	32 444	95 603	39		21	64 724	69 488	30 512	95 236	39
22	63 186	67 589	32 411	95 597	38		22	64 749	69 520	30 480	95 229	38
23	63 213	67 622	32 378	95 591	37		23	64 775	69 552	30 448	95 223	37
24	63 239	67 654	32 346	95 585	36		24	64 800	69 584	30 416	95 217	36
25	63 266	67 687	32 313	95 579	35		25	64 826	69 615	30 385	95 211	35
26	63 292	67 719	32 281	95 573	34		26	64 851	69 647	30 353	95 204	34
27	63 319	67 752	32 248	95 567	33		27	64 877	69 679	30 321	95 198	33
28	63 345	67 785	32 215	95 561	32		28	64 902	69 710	30 290	95 192	32
29	63 372	67 817	32 183	95 555	31		29	64 927	69 742	30 258	95 185	31
30	63 398	67 850	32 150	95 549	30		30	64 953	69 774	30 226	95 179	30
31	63 425	67 882	32 118	95 543	29		31	64 978	69 805	30 195	95 173	29
32	63 451	67 915	32 085	95 537	28		32	65 003	69 837	30 163	95 167	28
33	63 478	67 947	32 053	95 531	27		33	65 029	69 868	30 132	95 160	27
34	63 504	67 980	32 020	95 525	26		34	65 054	69 900	30 100	95 154	26
35	63 531	68 012	31 988	95 519	25		35	65 079	69 932	30 068	95 148	25
36	63 557	68 044	31 956	95 513	24		36	65 104	69 963	30 037	95 141	24
37	63 583	68 077	31 923	95 507	23		37	65 130	69 995	30 005	95 135	23
38	63 610	68 109	31 891	95 500	22		38	65 155	70 026	29 974	95 129	22
39	63 636	68 142	31 858	95 494	21		39	65 180	70 058	29 942	95 122	21
40	63 662	68 174	31 826	95 488	20		40	65 205	70 089	29 911	95 116	20
41	63 689	68 206	31 794	95 482	19		41	65 230	70 121	29 879	95 110	19
42	63 715	68 239	31 761	95 476	18		42	65 255	70 152	29 848	95 103	18
43	63 741	68 271	31 729	95 470	17		43	65 281	70 184	29 816	95 097	17
44	63 767	68 303	31 697	95 464	16		44	65 306	70 215	29 785	95 090	16
45	63 794	68 336	31 664	95 458	15		45	65 331	70 247	29 753	95 084	15
46	63 820	68 368	31 632	95 452	14		46	65 356	70 278	29 722	95 078	14
47	63 846	68 400	31 600	95 446	13		47	65 381	70 309	29 691	95 071	13
48	63 872	68 432	31 568	95 440	12		48	65 406	70 341	29 659	95 065	12
49	63 898	68 465	31 535	95 434	11		49	65 431	70 372	29 628	95 059	11
50	63 924	68 497	31 503	95 427	10		50	65 456	70 404	29 596	95 052	10
51	63 950	68 529	31 471	95 421	9		51	65 481	70 435	29 565	95 046	9
52	63 976	68 561	31 439	95 415	8		52	65 506	70 466	29 534	95 039	8
53	64 002	68 593	31 407	95 409	7		53	65 531	70 498	29 502	95 033	7
54	64 028	68 626	31 374	95 403	6		54	65 556	70 529	29 471	95 027	6
55	64 054	68 658	31 342	95 397	5		55	65 580	70 560	29 440	95 020	5
56	64 080	68 690	31 310	95 391	4		56	65 605	70 592	29 408	95 014	4
57	64 106	68 722	31 278	95 384	3		57	65 630	70 623	29 377	95 007	3
58	64 132	68 754	31 246	95 378	2		58	65 655	70 654	29 346	95 001	2
59	64 158	68 786	31 214	95 372	1		59	65 680	70 685	29 315	94 995	1
60	64 184	68 818	31 182	95 366	0		60	65 705	70 717	29 283	94 988	0
′	log cos 9	log cot 9	log tan 10	log sin 9	′		′	log cos 9	log cot 9	log tan 10	log sin 9	′

′	log sin −9−	log tan −9−	log cot −10−	log cos −9−	′
0	65 705	70 717	29 283	94 988	60
1	65 729	70 748	29 252	94 982	59
2	65 754	70 779	29 221	94 975	58
3	65 779	70 810	29 190	94 969	57
4	65 804	70 841	29 159	94 962	56
5	65 828	70 873	29 127	94 956	55
6	65 853	70 904	29 096	94 949	54
7	65 878	70 935	29 065	94 943	53
8	65 902	70 966	29 034	94 936	52
9	65 927	70 997	29 003	94 930	51
10	65 952	71 028	28 972	94 923	50
11	65 976	71 059	28 941	94 917	49
12	66 001	71 090	28 910	94 911	48
13	66 025	71 121	28 879	94 904	47
14	65 050	71 153	28 847	94 898	46
15	65 075	71 184	28 816	94 891	45
16	66 099	71 215	28 785	94 885	44
17	66 124	71 246	28 754	94 878	43
18	66 148	71 277	28 723	94 871	42
19	66 173	71 308	28 692	94 865	41
20	66 197	71 339	28 661	94 858	40
21	66 221	71 370	28 630	94 852	39
22	66 246	71 401	28 599	94 845	38
23	66 270	71 431	28 569	94 839	37
24	65 295	71 462	28 538	94 832	36
25	66 319	71 493	28 507	94 826	35
26	66 343	71 524	28 476	94 819	34
27	66 368	71 555	28 445	94 813	33
28	66 392	71 586	28 414	94 806	32
29	66 416	71 617	28 383	94 799	31
30	66 441	71 648	28 352	94 793	30
31	66 465	71 679	28 321	94 786	29
32	66 489	71 709	28 291	94 780	28
33	66 513	71 740	28 260	94 773	27
34	66 537	71 771	28 229	94 767	26
35	66 562	71 802	28 198	94 760	25
36	66 586	71 833	28 167	94 753	24
37	66 610	71 863	28 137	94 747	23
38	66 634	71 894	28 106	94 740	22
39	66 658	71 925	28 075	94 734	21
40	66 682	71 955	28 045	94 727	20
41	66 706	71 986	28 014	94 720	19
42	66 731	72 017	27 983	94 714	18
43	66 755	72 048	27 952	94 707	17
44	66 779	72 078	27 922	94 700	16
45	66 803	72 109	27 891	94 694	15
46	66 827	72 140	27 860	94 687	14
47	66 851	72 170	27 830	94 680	13
48	66 875	72 201	27 799	94 674	12
49	66 899	72 231	27 769	94 667	11
50	66 922	72 262	27 738	94 660	10
51	66 946	72 293	27 707	94 654	9
52	66 970	72 323	27 677	94 647	8
53	66 994	72 354	27 646	94 640	7
54	67 018	72 384	27 616	94 634	6
55	67 042	72 415	27 585	94 627	5
56	67 066	72 445	27 555	94 620	4
57	67 090	72 476	27 524	94 614	3
58	67 113	72 506	27 494	94 607	2
59	67 137	72 537	27 463	94 600	1
60	67 161	72 567	27 433	94 593	0
′	log cos −9−	log cot −9−	log tan −10−	log sin −9−	′

′	log sin −9−	log tan −9−	log cot −10−	log cos −9−	′
0	67 161	72 567	27 433	94 593	60
1	67 185	72 598	27 402	94 587	59
2	67 208	72 628	27 372	94 580	58
3	67 232	72 659	27 341	94 573	57
4	67 256	72 689	27 311	94 567	56
5	67 280	72 720	27 280	94 560	55
6	67 303	72 750	27 250	94 553	54
7	67 327	72 780	27 220	94 546	53
8	67 350	72 811	27 189	94 540	52
9	67 374	72 841	27 159	94 533	51
10	67 398	72 872	27 128	94 526	50
11	67 421	72 902	27 098	94 519	49
12	67 445	72 932	27 068	94 513	48
13	67 468	72 963	27 037	94 506	47
14	67 492	72 993	27 007	94 499	46
15	67 515	73 023	26 977	94 492	45
16	67 539	73 054	26 946	94 485	44
17	67 562	73 084	26 916	94 479	43
18	67 586	73 114	26 886	94 472	42
19	67 609	73 144	26 856	94 465	41
20	67 633	73 175	26 825	94 458	40
21	67 656	73 205	26 795	94 451	39
22	67 680	73 235	26 765	94 445	38
23	67 703	73 265	26 735	94 438	37
24	67 726	73 295	26 705	94 431	36
25	67 750	73 326	26 674	94 424	35
26	67 773	73 356	26 644	94 417	34
27	67 796	73 386	26 614	94 410	33
28	67 820	73 416	26 584	94 404	32
29	67 843	73 446	26 554	94 397	31
30	67 866	73 476	26 524	94 390	30
31	67 890	73 507	26 493	94 383	29
32	67 913	73 537	26 463	94 376	28
33	67 936	73 567	26 433	94 369	27
34	67 959	73 597	26 403	94 362	26
35	67 982	73 627	26 373	94 355	25
36	68 006	73 657	26 343	94 349	24
37	68 029	73 687	26 313	94 342	23
38	68 052	73 717	26 283	94 335	22
39	68 075	73 747	26 253	94 328	21
40	68 098	73 777	26 223	94 321	20
41	68 121	73 807	26 193	94 314	19
42	68 144	73 837	26 163	94 307	18
43	68 167	73 867	26 133	94 300	17
44	68 190	73 897	26 103	94 293	16
45	68 213	73 927	26 073	94 286	15
46	68 237	73 957	26 043	94 279	14
47	68 260	73 987	26 013	94 273	13
48	68 283	74 017	25 983	94 266	12
49	68 305	74 047	25 953	94 259	11
50	68 328	74 077	25 923	94 252	10
51	68 351	74 107	25 893	94 245	9
52	68 374	74 137	25 863	94 238	8
53	68 397	74 166	25 834	94 231	7
54	68 420	74 196	25 804	94 224	6
55	68 443	74 226	25 774	94 217	5
56	68 466	74 256	25 744	94 210	4
57	68 489	74 286	25 714	94 203	3
58	68 512	74 316	25 684	94 196	2
59	68 534	74 345	25 655	94 189	1
60	68 557	74 375	25 625	94 182	0
′	log cos −9−	log cot −9−	log tan −10−	log sin −9−	′

′	log sin	log tan	log cot	log cos	′
	—9—	—9—	—10—	—9—	
0	68 557	74 375	25 625	94 182	60
1	68 580	74 405	25 595	94 175	59
2	68 603	74 435	25 565	94 168	58
3	68 625	74 465	25 535	94 161	57
4	68 648	74 494	25 506	94 154	56
5	68 671	74 524	25 476	94 147	55
6	68 694	74 554	25 446	94 140	54
7	68 716	74 583	25 417	94 133	53
8	68 739	74 613	25 387	94 126	52
9	68 762	74 643	25 357	94 119	51
10	68 784	74 673	25 327	94 112	50
11	68 807	74 702	25 298	94 105	49
12	68 829	74 732	25 268	94 098	48
13	68 852	74 762	25 238	94 090	47
14	68 875	74 791	25 209	94 083	46
15	68 897	74 821	25 179	94 076	45
16	68 920	74 851	25 149	94 069	44
17	68 942	74 880	25 120	94 062	43
18	68 965	74 910	25 090	94 055	42
19	68 987	74 939	25 061	94 048	41
20	69 010	74 969	25 031	94 041	40
21	69 032	74 998	25 002	94 034	39
22	69 055	75 028	24 972	94 027	38
23	69 077	75 058	24 942	94 020	37
24	69 100	75 087	24 913	94 012	36
25	69 122	75 117	24 883	94 005	35
26	69 144	75 146	24 854	93 998	34
27	69 167	75 176	24 824	93 991	33
28	69 189	75 205	24 795	93 984	32
29	69 212	75 235	24 765	93 977	31
30	69 234	75 264	24 736	93 970	30
31	69 256	75 294	24 706	93 963	29
32	69 279	75 323	24 677	93 955	28
33	69 301	75 353	24 647	93 948	27
34	69 323	75 382	24 618	93 941	26
35	69 345	75 411	24 589	93 934	25
36	69 368	75 441	24 559	93 927	24
37	69 390	75 470	24 530	93 920	23
38	69 412	75 500	24 500	93 912	22
39	69 434	75 529	24 471	93 905	21
40	69 456	75 558	24 442	93 898	20
41	69 479	75 588	24 412	93 891	19
42	69 501	75 617	24 383	93 884	18
43	69 523	75 647	24 353	93 876	17
44	69 545	75 676	24 324	93 869	16
45	69 567	75 705	24 295	93 862	15
46	69 589	75 735	24 265	93 855	14
47	69 611	75 764	24 236	93 847	13
48	69 633	75 793	24 207	93 840	12
49	69 655	75 822	24 178	93 833	11
50	69 677	75 852	24 148	93 826	10
51	69 699	75 881	24 119	93 819	9
52	69 721	75 910	24 090	93 811	8
53	69 743	75 939	24 061	93 804	7
54	69 765	75 969	24 031	93 797	6
55	69 787	75 998	24 002	93 789	5
56	69 809	76 027	23 973	93 782	4
57	69 831	76 056	23 944	93 775	3
58	69 853	76 086	23 914	93 768	2
59	69 875	76 115	23 885	93 760	1
60	69 897	76 144	23 856	93 753	0
	—9—	—9—	—10—	—9—	
′	log cos	log cot	log tan	log sin	′

′	log sin	log tan	log cot	log cos	′
	—9—	—9—	—10—	—9—	
0	69 897	76 144	23 856	93 753	60
1	69 919	76 173	23 827	93 746	59
2	69 941	76 202	23 798	93 738	58
3	69 963	76 231	23 769	93 731	57
4	69 984	76 261	23 739	93 724	56
5	70 006	76 290	23 710	93 717	55
6	70 028	76 319	23 681	93 709	54
7	70 050	76 348	28 652	93 702	53
8	70 072	76 377	23 623	93 695	52
9	70 093	76 406	23 594	93 687	51
10	70 115	76 435	23 565	93 680	50
11	70 137	76 464	23 536	93 673	49
12	70 159	76 493	23 507	93 665	48
13	70 180	76 522	23 478	93 658	47
14	70 202	76 551	23 449	93 650	46
15	70 224	76 580	23 420	93 643	45
16	70 245	76 609	23 391	93 636	44
17	70 267	76 639	23 361	93 628	43
18	70 288	76 668	23 332	93 621	42
19	70 310	76 697	23 303	93 614	41
20	70 332	76 725	23 275	93 606	40
21	70 353	76 754	23 246	93 599	39
22	70 375	76 783	23 217	93 591	38
23	70 396	76 812	23 188	93 584	37
24	70 418	76 841	23 159	93 577	36
25	70 439	76 870	23 130	93 569	35
26	70 461	76 899	23 101	93 562	34
27	70 482	76 928	23 072	93 554	33
28	70 504	76 957	23 043	93 547	32
29	70 525	76 986	23 014	93 539	31
30	70 547	77 015	22 985	93 532	30
31	70 568	77 044	22 956	93 525	29
32	70 590	77 073	22 927	93 517	28
33	70 611	77 101	22 899	93 510	27
34	70 633	77 130	22 870	93 502	26
35	70 654	77 159	22 841	93 495	25
36	70 675	77 188	22 812	93 487	24
37	70 697	77 217	22 783	93 480	23
38	70 718	77 246	22 754	93 472	22
39	70 739	77 274	22 726	93 465	21
40	70 761	77 303	22 697	93 457	20
41	70 782	77 332	22 668	93 450	19
42	70 803	77 361	22 639	93 442	18
43	70 824	77 390	22 610	93 435	17
44	70 846	77 418	22 582	93 427	16
45	70 867	77 447	22 553	93 420	15
46	70 888	77 476	22 524	93 412	14
47	70 909	77 505	22 495	93 405	13
48	70 931	77 533	22 467	93 397	12
49	70 952	77 562	22 438	93 390	11
50	70 973	77 591	22 409	93 382	10
51	70 994	77 619	22 381	93 375	9
52	71 015	77 648	22 352	93 367	8
53	71 036	77 677	22 323	93 360	7
54	71 058	77 706	22 294	93 352	6
55	71 079	77 734	22 266	93 344	5
56	71 100	77 763	22 237	93 337	4
57	71 121	77 791	22 209	93 329	3
58	71 142	77 820	22 180	93 322	2
59	71 163	77 849	22 151	93 314	1
60	71 184	77 877	22 123	93 307	0
	—9—	—9—	—10—	—9—	
′	log cos	log cot	log tan	log sin	′

′	log sin	log tan	log cot	log cos	′
	9—	9—	10—	9—	
0	71 184	77 877	22 123	93 307	60
1	71 205	77 906	22 094	93 299	59
2	71 226	77 935	22 065	93 291	58
3	71 247	77 963	22 037	93 284	57
4	71 268	77 992	22 008	93 276	56
5	71 289	78 020	21 980	93 269	55
6	71 310	78 049	21 951	93 261	54
7	71 331	78 077	21 923	93 253	53
8	71 352	78 106	21 894	93 246	52
9	71 373	78 135	21 865	93 238	51
10	71 393	78 163	21 837	93 230	50
11	71 414	78 192	21 808	93 223	49
12	71 435	78 220	21 780	93 215	48
13	71 456	78 249	21 751	93 207	47
14	71 477	78 277	21 723	93 200	46
15	71 498	78 306	21 694	93 192	45
16	71 519	78 334	21 666	93 184	44
17	71 539	78 363	21 637	93 177	43
18	71 560	78 391	21 609	93 169	42
19	71 581	78 419	21 581	93 161	41
20	71 602	78 448	21 552	93 154	40
21	71 622	78 476	21 524	93 146	39
22	71 643	78 505	21 495	93 138	38
23	71 664	78 533	21 467	93 131	37
24	71 685	78 562	21 438	93 123	36
25	71 705	78 590	21 410	93 115	35
26	71 726	78 618	21 382	93 108	34
27	71 747	78 647	21 353	93 100	33
28	71 767	78 675	21 325	93 092	32
29	71 788	78 704	21 296	93 084	31
30	71 809	78 732	21 268	93 077	30
31	71 829	78 760	21 240	93 069	29
32	71 850	78 789	21 211	93 061	28
33	71 870	78 817	21 183	93 053	27
34	71 891	78 845	21 155	93 046	26
35	71 911	78 874	21 126	93 038	25
36	71 932	78 902	21 098	93 030	24
37	71 952	78 930	21 070	93 022	23
38	71 973	78 959	21 041	93 014	22
39	71 994	78 987	21 013	93 007	21
40	72 014	79 015	20 985	92 999	20
41	72 034	79 043	20 957	92 991	19
42	72 055	79 072	20 928	92 983	18
43	72 075	79 100	20 900	92 976	17
44	72 096	79 128	20 872	92 968	16
45	72 116	79 156	20 844	92 960	15
46	72 137	79 185	20 815	92 952	14
47	72 157	79 213	20 787	92 944	13
48	72 177	79 241	20 759	92 936	12
49	72 198	79 269	20 731	92 929	11
50	72 218	79 297	20 703	92 921	10
51	72 238	79 326	20 674	92 913	9
52	72 259	79 354	20 646	92 905	8
53	72 279	79 382	20 618	92 897	7
54	72 299	79 410	20 590	92 889	6
55	72 320	79 438	20 562	92 881	5
56	72 340	79 466	20 534	92 874	4
57	72 360	79 495	20 505	92 866	3
58	72 381	79 523	20 477	92 858	2
59	72 401	79 551	20 449	92 850	1
60	72 421	79 579	20 421	92 842	0
	9—	9—	10—	9—	
′	log cos	log cot	log tan	log sin	′

′	log sin	log tan	log cot	log cos	′
	9—	9—	10—	9—	
0	72 421	79 579	20 421	92 842	60
1	72 441	79 607	20 393	92 834	59
2	72 461	79 635	20 365	92 826	58
3	72 482	79 663	20 337	92 818	57
4	72 502	79 691	20 309	92 810	56
5	72 522	79 719	20 281	92 803	55
6	72 542	79 747	20 253	92 795	54
7	72 562	79 776	20 224	92 787	53
8	72 582	79 804	20 196	92 779	52
9	72 602	79 832	20 168	92 771	51
10	72 622	79 860	20 140	92 763	50
11	72 643	79 888	20 112	92 755	49
12	72 663	79 916	20 084	92 747	48
13	72 683	79 944	20 056	92 739	47
14	72 703	79 972	20 028	92 731	46
15	72 723	80 000	20 000	92 723	45
16	72 743	80 028	19 972	92 715	44
17	72 763	80 056	19 944	92 707	43
18	72 783	80 084	19 916	92 699	42
19	72 803	80 112	19 888	92 691	41
20	72 823	80 140	19 860	92 683	40
21	72 843	80 168	19 832	92 675	39
22	72 863	80 195	19 805	92 667	38
23	72 883	80 223	19 777	92 659	37
24	72 902	80 251	19 749	92 651	36
25	72 922	80 279	19 721	92 643	35
26	72 942	80 307	19 693	92 635	34
27	72 962	80 335	19 665	92 627	33
28	72 982	80 363	19 637	92 619	32
29	73 002	80 391	19 609	92 611	31
30	73 022	80 419	19 581	92 603	30
31	73 041	80 447	19 553	92 595	29
32	73 061	80 474	19 526	92 587	28
33	73 081	80 502	19 498	92 579	27
34	73 101	80 530	19 470	92 571	26
35	73 121	80 558	19 442	92 563	25
36	73 140	80 586	19 414	92 555	24
37	73 160	80 614	19 386	92 546	23
38	73 180	80 642	19 358	92 538	22
39	73 200	80 669	19 331	92 530	21
40	73 219	80 697	19 303	92 522	20
41	73 239	80 725	19 275	92 514	19
42	73 259	80 753	19 247	92 506	18
43	73 278	80 781	19 219	92 498	17
44	73 298	80 808	19 192	92 490	16
45	73 318	80 836	19 164	92 482	15
46	73 337	80 864	19 136	92 473	14
47	73 357	80 892	19 108	92 465	13
48	73 377	80 919	19 081	92 457	12
49	73 396	80 947	19 053	92 449	11
50	73 416	80 975	19 025	92 441	10
51	73 435	81 003	18 997	92 433	9
52	73 455	81 030	18 970	92 425	8
53	73 474	81 058	18 942	92 416	7
54	73 494	81 086	18 914	92 408	6
55	73 513	81 113	18 887	92 400	5
56	73 533	81 141	18 859	92 392	4
57	73 552	81 169	18 831	92 384	3
58	73 572	81 196	18 804	92 376	2
59	73 591	81 224	18 776	92 367	1
60	73 611	81 252	18 748	92 359	0
	9—	9—	10—	9—	
′	log cos	log cot	log tan	log sin	′

33°

′	log sin −9−	log tan −9−	log cot −10−	log cos −9−	′
0	73 611	81 252	18 748	92 359	60
1	73 630	81 279	18 721	92 351	59
2	73 650	81 307	18 693	92 343	58
8	73 669	81 335	18 665	92 335	57
4	73 689	81 362	18 638	92 326	56
5	73 708	81 390	18 610	92 318	55
6	73 727	81 418	18 582	92 310	54
7	73 747	81 445	18 555	92 302	53
8	73 766	81 473	18 527	92 293	52
9	73 785	81 500	18 500	92 285	51
10	73 805	81 528	18 472	92 277	50
11	73 824	81 556	18 444	92 269	49
12	73 843	81 583	18 417	92 260	48
13	73 863	81 611	18 389	92 252	47
14	73 882	81 638	18 362	92 244	46
15	73 901	81 666	18 334	92 235	45
16	73 921	81 693	18 307	92 227	44
17	73 940	81 721	18 279	92 219	43
18	73 959	81 748	18 252	92 211	42
19	73 978	81 776	18 224	92 202	41
20	73 997	81 803	18 197	92 194	40
21	74 017	81 831	18 169	92 186	39
22	74 036	81 858	18 142	92 177	38
23	74 055	81 886	18 114	92 169	37
24	74 074	81 913	18 087	92 161	36
25	74 093	81 941	18 059	92 152	35
26	74 113	81 968	18 032	92 144	34
27	74 132	81 996	18 004	92 136	33
28	74 151	82 023	17 977	92 127	32
29	74 170	82 051	17 949	92 119	31
30	74 189	82 078	17 922	92 111	30
31	74 208	82 106	17 894	92 102	29
32	74 227	82 133	17 867	92 094	28
33	74 246	82 161	17 839	92 086	27
34	74 265	82 188	17 812	92 077	26
35	74 284	82 215	17 785	92 069	25
36	74 303	82 243	17 757	92 060	24
37	74 322	82 270	17 730	92 052	23
38	74 341	82 298	17 702	92 044	22
39	74 360	82 325	17 675	92 035	21
40	74 379	82 352	17 648	92 027	20
41	74 398	82 380	17 620	92 018	19
42	74 417	82 407	17 593	92 010	18
43	74 436	82 435	17 565	92 002	17
44	74 455	82 462	17 538	91 993	16
45	74 474	82 489	17 511	91 985	15
46	74 493	82 517	17 483	91 976	14
47	74 512	82 544	17 456	91 968	13
48	74 531	82 571	17 429	91 959	12
49	74 549	82 599	17 401	91 951	11
50	74 568	82 626	17 374	91 942	10
51	74 587	82 653	17 347	91 934	9
52	74 606	82 681	17 319	91 925	8
53	74 625	82 708	17 292	91 917	7
54	74 644	82 735	17 265	91 908	6
55	74 662	82 762	17 238	91 900	5
56	74 681	82 790	17 210	91 891	4
57	74 700	82 817	17 183	91 883	3
58	74 719	82 844	17 156	91 874	2
59	74 737	82 871	17 129	91 866	1
60	74 756	82 899	17 101	91 857	0
′	log cos −9−	log cot −9−	log tan −10−	log sin −9−	′

56°

34°

′	log sin −9−	log tan −9−	log cot −10−	log cos −9−	′
0	74 756	82 899	17 101	91 857	60
1	74 775	82 926	17 074	91 849	59
2	74 794	82 953	17 047	91 840	58
3	74 812	82 980	17 020	91 832	57
4	74 831	83 008	16 992	91 823	56
5	74 850	83 035	16 965	91 815	55
6	74 868	83 062	16 938	91 806	54
7	74 887	83 089	16 911	91 798	53
8	74 906	83 117	16 883	91 789	52
9	74 924	83 144	16 856	91 781	51
10	74 943	83 171	16 829	91 772	50
11	74 961	83 198	16 802	91 763	49
12	74 980	83 225	16 775	91 755	48
13	74 999	83 252	16 748	91 746	47
14	75 017	83 280	16 720	91 738	46
15	75 036	83 307	16 693	91 729	45
16	75 054	83 334	16 666	91 720	44
17	75 073	83 361	16 639	91 712	43
18	75 091	83 388	16 612	91 703	42
19	75 110	83 415	16 585	91 695	41
20	75 128	83 442	16 558	91 686	40
21	75 147	83 470	16 530	91 677	39
22	75 165	83 497	16 503	91 669	38
23	75 184	83 524	16 476	91 660	37
24	75 202	83 551	16 449	91 651	36
25	75 221	83 578	16 422	91 643	35
26	75 239	83 605	16 395	91 634	34
27	75 258	83 632	16 368	91 625	33
28	75 276	83 659	16 341	91 617	32
29	75 294	83 686	16 314	91 608	31
30	75 313	83 713	16 287	91 599	30
31	75 331	83 740	16 260	91 591	29
32	75 350	83 768	16 232	91 582	28
33	75 368	83 795	16 205	91 573	27
34	75 386	83 822	16 178	91 565	26
35	75 405	83 849	16 151	91 556	25
36	75 423	83 876	16 124	91 547	24
37	75 441	83 903	16 097	91 538	23
38	75 459	83 930	16 070	91 530	22
39	75 478	83 957	16 043	91 521	21
40	75 496	83 984	16 016	91 512	20
41	75 514	84 011	15 989	91 504	19
42	75 533	84 038	15 962	91 495	18
43	75 551	84 065	15 935	91 486	17
44	75 569	84 092	15 908	91 477	16
45	75 587	84 119	15 881	91 469	15
46	75 605	84 146	15 854	91 460	14
47	75 624	84 173	15 827	91 451	13
48	75 642	84 200	15 800	91 442	12
49	75 660	84 227	15 773	91 433	11
50	75 678	84 254	15 746	91 425	10
51	75 696	84 280	15 720	91 416	9
52	75 714	84 307	15 693	91 407	8
53	75 733	84 334	15 666	91 398	7
54	75 751	84 361	15 639	91 389	6
55	75 769	84 388	15 612	91 381	5
56	75 787	84 415	15 585	91 372	4
57	75 805	84 442	15 558	91 363	3
58	75 823	84 469	15 531	91 354	2
59	75 841	84 496	15 504	91 345	1
60	75 859	84 523	15 477	91 336	0
′	log cos −9−	log cot −9−	log tan −10−	log sin −9−	′

55°

′	log sin	log tan	log cot	log cos	′	′	log sin	log tan	log cot	log cos	′
	9—	9—	10—	9—			9—	9—	10—	9—	
0	75 859	84 523	15 477	91 336	60	0	76 922	86 126	13 874	90 796	60
1	75 877	84 550	15 450	91 328	59	1	76 939	86 153	13 847	90 787	59
2	75 895	84 576	15 424	91 319	58	2	76 957	86 179	13 821	90 777	58
3	75 913	84 603	15 397	91 310	57	3	76 974	86 206	13 794	90 768	57
4	75 931	84 630	15 370	91 301	56	4	76 991	86 232	13 768	90 759	56
5	75 949	84 657	15 343	91 292	55	5	77 009	86 259	13 741	90 750	55
6	75 967	84 684	15 316	91 283	54	6	77 026	86 285	13 715	90 741	54
7	75 985	84 711	15 289	91 274	53	7	77 043	86 312	13 688	90 731	53
8	76 003	84 738	15 262	91 266	52	8	77 061	86 338	13 662	90 722	52
9	76 021	84 764	15 236	91 257	51	9	77 078	86 365	13 635	90 713	51
10	76 039	84 791	15 209	91 248	50	10	77 095	86 392	13 608	90 704	50
11	76 057	84 818	15 182	91 239	49	11	77 112	86 418	13 582	90 694	49
12	76 075	84 845	15 155	91 230	48	12	77 130	86 445	13 555	90 685	48
13	76 093	84 872	15 128	91 221	47	13	77 147	86 471	13 529	90 676	47
14	76 111	84 899	15 101	91 212	46	14	77 164	86 498	13 502	90 667	46
15	76 129	84 925	15 075	91 203	45	15	77 181	86 524	13 476	90 657	45
16	76 146	84 952	15 048	91 194	44	16	77 199	86 551	13 449	90 648	44
17	76 164	84 979	15 021	91 185	43	17	77 216	86 577	13 423	90 639	43
18	76 182	85 006	14 994	91 176	42	18	77 233	86 603	13 397	90 630	42
19	76 200	85 033	14 967	91 167	41	19	77 250	86 630	13 370	90 620	41
20	76 218	85 059	14 941	91 158	40	20	77 268	86 656	13 344	90 611	40
21	76 236.	85 086	14 914	91 149	39	21	77 285	86 683	13 317	90 602	39
22	76 253	85 113	14 887	91 141	38	22	77 302	86 709	13 291	90 592	38
23	76 271	85 140	14 860	91 132	37	23	77 319	86 736	13 264	90 583	37
24	76 289	85 166	14 834	91 123	36	24	77 336	86 762	13 238	90 574	36
25	76 307	85 193	14 807	91 114	35	25	77 353	86 789	13 211	90 565	35
26	76 324	85 220	14 780	91 105	34	26	77 370	86 815	13 185	90 555	34
27	76 342	85 247	14 753	91 096	33	27	77 387	86 842	13 158	90 546	33
28	76 360	85 273	14 727	91 087	32	28	77 405	86 868	13 132	90 537	32
29	76 378	85 300	14 700	91 078	31	29	77 422	86 894	13 106	90 527	31
30	76 395	85 327	14 673	91 069	30	30	77 439	86 921	13 079	90 518	30
31	76 413	85 354	14 646	91 060	29	31	77 456	86 947	13 053	90 509	29
32	76 431	85 380	14 620	91 051	28	32	77 473	86 974	13 026	90 499	28
33	76 448	85 407	14 593	91 042	27	33	77 490	87 000	13 000	90 490	27
34	76 466	85 434	14 566	91 033	26	34	77 507	87 027	12 973	90 480	26
35	76 484	85 460	14 540	91 023	25	35	77 524	87 053	12 947	90 471	25
36	76 501	85 487	14 513	91 014	24	36	77 541	87 079	12 921	90 462	24
37	76 519	85 514	14 486	91 005	23	37	77 558	87 106	12 894	90 452	23
38	76 537	85 540	14 460	90 996	22	38	77 575	87 132	12 868	90 443	22
39	76 554	85 567	14 433	90 987	21	39	77 592	87 158	12 842	90 434	21
40	76 572	85 594	14 406	90 978	20	40	77 609	87 185	12 815	90 424	20
41	76 590	85 620	14 380	90 969	19	41	77 626	87 211	12 789	90 415	19
42	76 607	85 647	14 353	90 960	18	42	77 643	87 238	12 762	90 405	18
43	76 625	85 674	14 326	90 951	17	43	77 660	87 264	12 736	90 396	17
44	76 642	85 700	14 300	90 942	16	44	77 677	87 290	12 710	90 386	16
45	76 660	85 727	14 273	90 933	15	45	77 694	87 317	12 683	90 377	15
46	76 677	85 754	14 246	90 924	14	46	77 711	87 343	12 657	90 368	14
47	76 695	85 780	14 220	90 915	13	47	77 728	87 369	12 631	90 358	13
48	76 712	85 807	14 193	90 906	12	48	77 744	87 396	12 604	90 349	12
49	76 730	85 834	14 166	90 896	11	49	77 761	87 422	12 578	90 339	11
50	76 747	85 860	14 140	90 887	10	50	77 778	87 448	12 552	90 330	10
51	76 765	85 887	14 113	90 878	9	51	77 795	87 475	12 525	90 320	9
52	76 782	85 913	14 087	90 869	8	52	77 812	87 501	12 499	90 311	8
53	76 800	85 940	14 060	90 860	7	53	77 829	87 527	12 473	90 301	7
54	76 817	85 967	14 033	90 851	6	54	77 846	87 554	12 446	90 292	6
55	76 835	85 993	14 007	90 842	5	55	77 862	87 580	12 420	90 282	5
56	76 852	86 020	13 980	90 832	4	56	77 879	87 606	12 394	90 273	4
57	76 870	86 046	13 954	90 823	3	57	77 896	87 633	12 367	90 263	3
58	76 887	86 073	13 927	90 814	2	58	77 913	87 659	12 341	90 254	2
59	76 904	86 100	13 900	90 805	1	59	77 930	87 685	12 315	90 244	1
60	76 922	86 126	13 874	90 796	0	60	77 946	87 711	12 289	90 235	0
	9—	9—	10—	9—			9—	9—	10—	9—	
′	log cos	log cot	log tan	log sin	′	′	log cos	log cot	log tan	log sin	′

'	log sin	log tan	log cot	log cos	'
	-9-	-9-	-10-	-9-	
0	77 946	87 711	12 289	90 235	60
1	77 963	87 738	12 262	90 225	59
2	77 980	87 764	12 236	90 216	58
3	77 997	87 790	12 210	90 206	57
4	78 013	87 817	12 183	90 197	56
5	78 030	87 843	12 157	90 187	55
6	78 047	87 869	12 131	90 178	54
7	78 063	87 895	12 105	90 168	53
8	78 080	87 922	12 078	90 159	52
9	78 097	87 948	12 052	90 149	51
10	78 113	87 974	12 026	90 139	50
11	78 130	88 000	12 000	90 130	49
12	78 147	88 027	11 973	90 120	48
13	78 163	88 053	11 947	90 111	47
14	78 180	88 079	11 921	90 101	46
15	78 197	88 105	11 895	90 091	45
16	78 213	88 131	11 869	90 082	44
17	78 230	88 158	11 842	90 072	43
18	78 246	88 184	11 816	90 063	42
19	78 263	88 210	11 790	90 053	41
20	78 280	88 236	11 764	90 043	40
21	78 296	88 262	11 738	90 034	39
22	78 313	88 289	11 711	90 024	38
23	78 329	88 315	11 685	90 014	37
24	78 346	88 341	11 659	90 005	36
25	78 362	88 367	11 633	89 995	35
26	78 379	88 393	11 607	89 985	34
27	78 395	88 420	11 580	89 976	33
28	78 412	88 446	11 554	89 966	32
29	78 428	88 472	11 528	89 956	31
30	78 445	88 498	11 502	89 947	30
31	78 461	88 524	11 476	89 937	29
32	78 478	88 550	11 450	89 927	28
33	78 494	88 577	11 423	89 918	27
34	78 510	88 603	11 397	89 908	26
35	78 527	88 629	11 371	89 898	25
36	78 543	88 655	11 345	89 888	24
37	78 560	88 681	11 319	89 879	23
38	78 576	88 707	11 293	89 869	22
39	78 592	88 733	11 267	89 859	21
40	78 609	88 759	11 241	89 849	20
41	78 625	88 786	11 214	89 840	19
42	78 642	88 812	11 188	89 830	18
43	78 658	88 838	11 162	89 820	17
44	78 674	88 864	11 136	89 810	16
45	78 691	88 890	11 110	89 801	15
46	78 707	88 916	11 084	89 791	14
47	78 723	88 942	11 058	89 781	13
48	78 739	88 968	11 032	89 771	12
49	78 756	88 994	11 006	89 761	11
50	78 772	89 020	10 980	89 752	10
51	78 788	89 046	10 954	89 742	9
52	78 805	89 073	10 927	89 732	8
53	78 821	89 099	10 901	89 722	7
54	78 837	89 125	10 875	89 712	6
55	78 853	89 151	10 849	89 702	5
56	78 869	89 177	10 823	89 693	4
57	78 886	89 203	10 797	89 683	3
58	78 902	89 229	10 771	89 673	2
59	78 918	89 255	10 745	89 663	1
60	78 934	89 281	10 719	89 653	0
'	log cos	log cot	log tan	log sin	'

'	log sin	log tan	log cot	log cos	'
	-9-	-9-	-10-	-9-	
0	78 934	89 281	10 719	89 653	60
1	78 950	89 307	10 693	89 643	59
2	78 967	89 333	10 667	89 633	58
3	78 983	89 359	10 641	89 624	57
4	78 999	89 385	10 615	89 614	56
5	79 015	89 411	10 589	89 604	55
6	79 031	89 437	10 563	89 594	54
7	79 047	89 463	10 537	89 584	53
8	79 063	89 489	10 511	89 574	52
9	79 079	89 515	10 485	89 564	51
10	79 095	89 541	10 459	89 554	50
11	79 111	89 567	10 433	89 544	49
12	79 128	89 593	10 407	89 534	48
13	79 144	89 619	10 381	89 524	47
14	79 160	89 645	10 355	89 514	46
15	79 176	89 671	10 329	89 504	45
16	79 192	89 697	10 303	89 495	44
17	79 208	89 723	10 277	89 485	43
18	79 224	89 749	10 251	89 475	42
19	79 240	89 775	10 225	89 465	41
20	79 256	89 801	10 199	89 455	40
21	79 272	89 827	10 173	·89 445	39
22	79 288	89 853	10 147	89 435	38
23	79 304	89 879	10 121	89 425	37
24	79 319	89 905	10 095	89 415	36
25	79 335	89 931	10 069	89 405	35
26	79 351	89 957	10 043	89 395	34
27	79 367	89 983	10 017	89 385	33
28	79 383	90 009	09 991	89 375	32
29	79 399	90 035	09 965	89 364	31
30	79 415	90 061	09 939	89 354	30
31	79 431	90 086	09 914	89 344	29
32	79 447	90 112	09 888	89 334	28
33	79 463	90 138	09 862	89 324	27
34	79 478	90 164	09 836	89 314	26
35	79 494	90 190	09 810	89 304	25
36	79 510	90 216	09 784	89 294	24
37	79 526	90 242	09 758	89 284	23
38	79 542	90 268	09 732	89 274	22
39	79 558	90 294	09 706	89 264	21
40	79 573	90 320	09 680	89 254	20
41	79 589	90 346	09 654	89 244	19
42	79 605	90 371	09 629	89 233	18
43	79 621	90 397	09 603	89 223	17
44	79 636	90 423	09 577	89 213	16
45	79 652	90 449	09 551	89 203	15
46	79 668	90 475	09 525	89 193	14
47	79 684	90 501	09 499	89 183	13
48	79 699	90 527	09 473	89 173	12
49	79 715	90 553	09 447	89 162	11
50	79 731	90 578	09 422	89 152	10
51	79 746	90 604	09 396	89 142	9
52	79 762	90 630	09 370	89 132	8
53	79 778	90 656	09 344	89 122	7
54	79 793	90 682	09 318	89 112	6
55	79 809	90 708	09 292	89 101	5
56	79 825	90 734	09 266	89 091	4
57	79 840	90 759	09 241	89 081	3
58	79 856	90 785	09 215	89 071	2
59	79 872	90 811	09 189	89 060	1
60	79 887	90 837	09 163	89 050	0
'	log cos	log cot	log tan	log sin	'

′	log sin	log tan	log cot	log cos	′		′	log sin	log tan	log cot	log cos	′
	−9−	−9−	−10−	−9−				−9−	−9−	−10−	−9−	
0	79 887	90 837	09 163	89 050	60		0	80 807	92 381	07 619	88 425	60
1	79 903	90 863	09 137	89 040	59		1	80 822	92 407	07 593	88 415	59
2	79 918	90 889	09 111	89 030	58		2	80 837	92 433	07 567	88 404	58
3	79 934	90 914	09 086	89 020	57		3	80 852	92 458	07 542	88 394	57
4	79 950	90 940	09 060	89 009	56		4	80 867	92 484	07 516	88 383	56
5	79 965	90 966	09 034	88 999	55		5	80 882	92 510	07 490	88 372	55
6	79 981	90 992	09 008	88 989	54		6	80 897	92 535	07 465	88 362	54
7	79 996	91 018	08 982	88 978	53		7	80 912	92 561	07 439	88 351	53
8	80 012	91 043	08 957	88 968	52		8	80 927	92 587	07 413	88 340	52
9	80 027	91 069	08 931	88 958	51		9	80 942	92 612	07 388	88 330	51
10	80 043	91 095	08 905	88 948	50		10	80 957	92 638	07 362	88 319	50
11	80 058	91 121	08 879	88 937	49		11	80 972	92 663	07 337	88 308	49
12	80 074	91 147	08 853	88 927	48		12	80 987	92 689	07 311	88 298	48
13	80 089	91 172	08 828	88 917	47		13	81 002	92 715	07 285	88 287	47
14	80 105	91 198	08 802	88 906	46		14	81 017	92 740	07 260	88 276	46
15	80 120	91 224	08 776	88 896	45		15	81 032	92 766	07 234	88 266	45
16	80 136	91 250	08 750	88 886	44		16	81 047	92 792	07 208	88 255	44
17	80 151	91 276	08 724	88 875	43		17	81 061	92 817	07 183	88 244	43
18	80 166	91 301	08 699	88 865	42		18	81 076	92 843	07 157	88 234	42
19	80 182	91 327	08 673	88 855	41		19	81 091	92 868	07 132	88 223	41
20	80 197	91 353	08 647	88 844	40		20	81 106	92 894	07 106	88 212	40
21	80 213	91 379	08 621	88 834	39		21	81 121	92 920	07 080	88 201	39
22	80 228	91 404	08 596	88 824	38		22	81 136	92 945	07 055	88 191	38
23	80 244	91 430	08 570	88 813	37		23	81 151	92 971	07 029	88 180	37
24	80 259	91 456	08 544	88 803	36		24	81 166	92 996	07 004	88 169	36
25	80 274	91 482	08 518	88 793	35		25	81 180	93 022	06 978	88 158	35
26	80 290	91 507	08 493	88 782	34		26	81 195	93 048	06 952	88 148	34
27	80 305	91 533	08 467	88 772	33		27	81 210	93 073	06 927	88 137	33
28	80 320	91 559	08 441	88 761	32		28	81 225	93 099	06 901	88 126	32
29	80 336	91 585	08 415	88 751	31		29	81 240	93 124	06 876	88 115	31
30	80 351	91 610	08 390	88 741	30		30	81 254	93 150	06 850	88 105	30
31	80 366	91 636	08 364	88 730	29		31	81 269	93 175	06 825	88 094	29
32	80 382	91 662	08 338	88 720	28		32	81 284	93 201	06 799	88 083	28
33	80 397	91 688	08 312	88 709	27		33	81 299	93 227	06 773	88 072	27
34	80 412	91 713	08 287	88 699	26		34	81 314	93 252	06 748	88 061	26
35	80 428	91 739	08 261	88 688	25		35	81 328	93 278	06 722	88 051	25
36	80 443	91 765	08 235	88 678	24		36	81 343	93 303	06 697	88 040	24
37	80 458	91 791	08 209	88 668	23		37	81 358	93 329	06 671	88 029	23
38	80 473	91 816	08 184	88 657	22		38	81 372	93 354	06 646	88 018	22
39	80 489	91 842	08 158	88 647	21		39	81 387	93 380	06 620	88 007	21
40	80 504	91 868	08 132	88 636	20		40	81 402	93 406	06 594	87 996	20
41	80 519	91 893	08 107	88 626	19		41	81 417	93 431	06 569	87 985	19
42	80 534	91 919	08 081	88 615	18		42	81 431	93 457	06 543	87 975	18
43	80 550	91 945	08 055	88 605	17		43	81 446	93 482	06 518	87 964	17
44	80 565	91 971	08 029	88 594	16		44	81 461	93 508	06 492	87 953	16
45	80 580	91 996	08 004	88 584	15		45	81 475	93 533	06 467	87 942	15
46	80 595	92 022	07 978	88 573	14		46	81 490	93 559	06 441	87 931	14
47	80 610	92 048	07 952	88 563	13		47	81 505	93 584	06 416	87 920	13
48	80 625	92 073	07 927	88 552	12		48	81 519	93 610	06 390	87 909	12
49	80 641	92 099	07 901	88 542	11		49	81 534	93 636	06 364	87 898	11
50	80 656	92 125	07 875	88 531	10		50	81 549	93 661	06 339	87 887	10
51	80 671	92 150	07 850	88 521	9		51	81 563	93 687	06 313	87 877	9
52	80 686	92 176	07 824	88 510	8		52	81 578	93 712	06 288	87 866	8
53	80 701	92 202	07 798	88 499	7		53	81 592	93 738	06 262	87 855	7
54	80 716	92 227	07 773	88 489	6		54	81 607	93 763	06 237	87 844	6
55	80 731	92 253	07 747	88 478	5		55	81 622	93 789	06 211	87 833	5
56	80 746	92 279	07 721	88 468	4		56	81 636	93 814	06 186	87 822	4
57	80 762	92 304	07 696	88 457	3		57	81 651	93 840	06 160	87 811	3
58	80 777	92 330	07 670	88 447	2		58	81 665	93 865	06 135	87 800	2
59	80 792	92 356	07 644	88 436	1		59	81 680	93 891	06 109	87 789	1
60	80 807	92 381	07 619	88 425	0		60	81 694	93 916	06 084	87 778	0
	−9−	−9−	−10−	−9−				−9−	−9−	−10−	−9−	
′	log cos	log cot	log tan	log sin	′		′	log cos	log cot	log tan	log sin	′

′	log sin -9-	log tan -9-	log cot -10-	log cos -9-	′	′	log sin -9-	log tan -9-	log cot -10-	log cos -9-	′
0	81 694	93 916	06 084	87 778	60	0	82 551	95 444	04 556	87 107	60
1	81 709	93 942	06 058	87 767	59	1	82 565	95 469	04 531	87 096	59
2	81 723	93 967	06 033	87 756	58	2	82 579	95 495	04 505	87 085	58
3	81 738	93 993	06 007	87 745	57	3	82 593	95 520	04 480	87 073	57
4	81 752	94 018	05 982	87 734	56	4	82 607	95 545	04 455	87 062	56
5	81 767	94 044	05 956	87 723	55	5	82 621	95 571	04 429	87 050	55
6	81 781	94 069	05 931	87 712	54	6	82 635	95 596	04 404	87 039	54
7	81 796	94 095	05 905	87 701	53	7	82 649	95 622	04 378	87 028	53
8	81 810	94 120	05 880	87 690	52	8	82 663	95 647	04 353	87 016	52
9	81 825	94 146	05 854	87 679	51	9	82 677	95 672	04 328	87 005	51
10	81 839	94 171	05 829	87 668	50	10	82 691	95 698	04 302	86 993	50
11	81 854	94 197	05 803	87 657	49	11	82 705	95 723	04 277	86 982	49
12	81 868	94 222	05 778	87 646	48	12	82 719	95 748	04 252	86 970	48
13	81 882	94 248	05 752	87 635	47	13	82 733	95 774	04 226	86 959	47
14	81 897	94 273	05 727	87 624	46	14	82 747	95 799	04 201	86 947	46
15	81 911	94 299	05 701	87 613	45	15	82 761	95 825	04 175	86 936	45
16	81 926	94 324	05 676	87 601	44	16	82 775	95 850	04 150	86 924	44
17	81 940	94 350	05 650	87 590	43	17	82 788	95 875	04 125	86 913	43
18	81 955	94 375	05 625	87 579	42	18	82 802	95 901	04 099	86 902	42
19	81 969	94 401	05 599	87 568	41	19	82 816	95 926	04 074	86 890	41
20	81 983	94 426	05 574	87 557	40	20	82 830	95 952	04 048	86 879	40
21	81 998	94 452	05 548	87 546	39	21	82 844	95 977	04 023	86 867	39
22	82 012	94 477	05 523	87 535	38	22	82 858	96 002	03 998	86 855	38
23	82 026	94 503	05 497	87 524	37	23	82 872	96 028	03 972	86 844	37
24	82 041	94 528	05 472	87 513	36	24	82 885	96 053	03 947	86 832	36
25	82 055	94 554	05 446	87 501	35	25	82 899	96 078	03 922	86 821	35
26	82 069	94 579	05 421	87 490	34	26	82 913	96 104	03 896	86 809	34
27	82 084	94 604	05 396	87 479	33	27	82 927	96 129	03 871	86 798	33
28	82 098	94 630	05 370	87 468	32	28	82 941	96 155	03 845	86 786	32
29	82 112	94 655	05 345	87 457	31	29	82 955	96 180	03 820	86 775	31
30	82 126	94 681	05 319	87 446	30	30	82 968	96 205	03 795	86 763	30
31	82 141	94 706	05 294	87 434	29	31	82 982	96 231	03 769	86 752	29
32	82 155	94 732	05 268	87 423	28	32	82 996	96 256	03 744	86 740	28
33	82 169	94 757	05 243	87 412	27	33	83 010	96 281	03 719	86 728	27
34	82 184	94 783	05 217	87 401	26	34	83 023	96 307	03 693	86 717	26
35	82 198	94 808	05 192	87 390	25	35	83 037	96 332	03 668	86 705	25
36	82 212	94 834	05 166	87 378	24	36	83 051	96 357	03 643	86 694	24
37	82 226	94 859	05 141	87 367	23	37	83 065	96 383	03 617	86 682	23
38	82 240	94 884	05 116	87 356	22	38	83 078	96 408	03 592	86 670	22
39	82 255	94 910	05 090	87 345	21	39	83 092	96 433	03 567	86 659	21
40	82 269	94 935	05 065	87 334	20	40	83 106	96 459	03 541	86 647	20
41	82 283	94 961	05 039	87 322	19	41	83 120	96 484	03 516	86 635	19
42	82 297	94 986	05 014	87 311	18	42	83 133	96 510	03 490	86 624	18
43	82 311	95 012	04 988	87 300	17	43	83 147	96 535	03 465	86 612	17
44	82 326	95 037	04 963	87 288	16	44	83 161	96 560	03 440	86 600	16
45	82 340	95 062	04 938	87 277	15	45	83 174	96 586	03 414	86 589	15
46	82 354	95 088	04 912	87 266	14	46	83 188	96 611	03 389	86 577	14
47	82 368	95 113	04 887	87 255	13	47	83 202	96 636	03 364	86 565	13
48	82 382	95 139	04 861	87 243	12	48	83 215	96 662	03 338	86 554	12
49	82 396	95 164	04 836	87 232	11	49	83 229	96 687	03 313	86 542	11
50	82 410	95 190	04 810	87 221	10	50	83 242	96 712	03 288	86 530	10
51	82 424	95 215	04 785	87 209	9	51	83 256	96 738	03 262	86 518	9
52	82 439	95 240	04 760	87 198	8	52	83 270	96 763	03 237	86 507	8
53	82 453	95 266	04 734	87 187	7	53	83 283	96 788	03 212	86 495	7
54	82 467	95 291	04 709	87 175	6	54	83 297	96 814	03 186	86 483	6
55	82 481	95 317	04 683	87 164	5	55	83 310	96 839	03 161	86 472	5
56	82 495	95 342	04 658	87 153	4	56	83 324	96 864	03 136	86 460	4
57	82 509	95 368	04 632	87 141	3	57	83 338	96 890	03 110	86 448	3
58	82 523	95 393	04 607	87 130	2	58	83 351	96 915	03 085	86 436	2
59	82 537	95 418	04 582	87 119	1	59	83 365	96 940	03 060	86 425	1
60	82 551	95 444	04 556	87 107	0	60	83 378	96 966	03 034	86 413	0
′	log cos -9-	log cot -9-	log tan -10-	log sin -9-	′	′	log cos -9-	log cot -9-	log tan -10-	log sin -9-	′

′	log sin −9−	log tan −9−	log cot −10−	log cos −9−	′
0	83 378	96 966	03 034	86 413	60
1	83 392	96 991	03 009	86 401	59
2	83 405	97 016	02 984	86 389	58
3	83 419	97 042	02 958	86 377	57
4	83 432	97 067	02 933	86 366	56
5	83 446	97 092	02 908	86 354	55
6	83 459	97 118	02 882	86 342	54
7	83 473	97 143	02 857	86 330	53
8	83 486	97 168	02 832	86 318	52
9	83 500	97 193	02 807	86 306	51
10	83 513	97 219	02 781	86 295	50
11	83 527	97 244	02 756	86 283	49
12	83 540	97 269	02 731	86 271	48
13	83 554	97 295	02 705	86 259	47
14	83 567	97 320	02 680	86 247	46
15	83 581	97 345	02 655	86 235	45
16	83 594	97 371	02 629	86 223	44
17	83 608	97 396	02 604	86 211	43
18	83 621	97 421	02 579	86 200	42
19	83 634	97 447	02 553	86 188	41
20	83 648	97 472	02 528	86 176	40
21	83 661	97 497	02 503	86 164	39
22	83 674	97 523	02 477	86 152	38
23	83 688	97 548	02 452	86 140	37
24	83 701	97 573	02 427	86 128	36
25	83 715	97 598	02 402	86 116	35
26	83 728	97 624	02 376	86 104	34
27	83 741	97 649	02 351	86 092	33
28	83 755	97 674	02 326	86 080	32
29	83 768	97 700	02 300	86 068	31
30	83 781	97 725	02 275	86 056	30
31	83 795	97 750	02 250	86 044	29
32	83 808	97 776	02 224	86 032	28
33	83 821	97 801	02 199	86 020	27
34	83 834	97 826	02 174	86 008	26
35	83 848	97 851	02 149	85 996	25
36	83 861	97 877	02 123	85 984	24
37	83 874	97 902	02 098	85 972	23
38	83 887	97 927	02 073	85 960	22
39	83 901	97 953	02 047	85 948	21
40	83 914	97 978	02 022	85 936	20
41	83 927	98 003	01 997	85 924	19
42	83 940	98 029	01 971	85 912	18
43	83 954	98 054	01 946	85 900	17
44	83 967	98 079	01 921	85 888	16
45	83 980	98 104	01 896	85 876	15
46	83 993	98 130	01 870	85 864	14
47	84 006	98 155	01 845	85 851	13
48	84 020	98 180	01 820	85 839	12
49	84 033	98 206	01 794	85 827	11
50	84 046	98 231	01 769	85 815	10
51	84 059	98 256	01 744	85 803	9
52	84 072	98 281	01 719	85 791	8
53	84 085	98 307	01 693	85 779	7
54	84 098	98 332	01 668	85 766	6
55	84 112	98 357	01 643	85 754	5
56	84 125	98 383	01 617	85 742	4
57	84 138	98 408	01 592	85 730	3
58	84 151	98 433	01 567	85 718	2
59	84 164	98 458	01 542	85 706	1
60	84 177	98 484	01 516	85 693	0
′	log cos −9−	log cot −9−	log tan −10−	log sin −9−	′

′	log sin −9−	log tan −9−	log cot −10−	log cos −9−	′
0	84 177	98 484	01 516	85 693	60
1	84 190	98 509	01 491	85 681	59
2	84 203	98 534	01 466	85 669	58
3	84 216	98 560	01 440	85 657	57
4	84 229	98 585	01 415	85 645	56
5	84 242	98 610	01 390	85 632	55
6	84 255	98 635	01 365	85 620	54
7	84 269	98 661	01 339	85 608	53
8	84 282	98 686	01 314	85 596	52
9	84 295	98 711	01 289	85 583	51
10	84 308	98 737	01 263	85 571	50
11	84 321	98 762	01 238	85 559	49
12	84 334	98 787	01 213	85 547	48
13	84 347	98 812	01 188	85 534	47
14	84 360	98 838	01 162	85 522	46
15	84 373	98 863	01 137	85 510	45
16	84 385	98 888	01 112	85 497	44
17	84 398	98 913	01 087	85 485	43
18	84 411	98 939	01 061	85 473	42
19	84 424	98 964	01 036	85 460	41
20	84 437	98 989	01 011	85 448	40
21	84 450	99 015	00 985	85 436	39
22	84 463	99 040	00 960	85 423	38
23	84 476	99 065	00 935	85 411	37
24	84 489	99 090	00 910	85 399	36
25	84 502	99 116	00 884	85 386	35
26	84 515	99 141	00 859	85 374	34
27	84 528	99 166	00 834	85 361	33
28	84 540	99 191	00 809	85 349	32
29	84 553	99 217	00 783	85 337	31
30	84 566	99 242	00 758	85 324	30
31	84 579	99 267	00 733	85 312	29
32	84 592	99 293	00 707	85 299	28
33	84 605	99 318	00 682	85 287	27
34	84 618	99 343	00 657	85 274	26
35	84 630	99 368	00 632	85 262	25
36	84 643	99 394	00 606	85 250	24
37	84 656	99 419	00 581	85 237	23
38	84 669	99 444	00 556	85 225	22
39	84 682	99 469	00 531	85 212	21
40	84 694	99 495	00 505	85 200	20
41	84 707	99 520	00 480	85 187	19
42	84 720	99 545	00 455	85 175	18
43	84 733	99 570	00 430	85 162	17
44	84 745	99 596	00 404	85 150	16
45	84 758	99 621	00 379	85 137	15
46	84 771	99 646	00 354	85 125	14
47	84 784	99 672	00 328	85 112	13
48	84 796	99 697	00 303	85 100	12
49	84 809	99 722	00 278	85 087	11
50	84 822	99 747	00 253	85 074	10
51	84 835	99 773	00 227	85 062	9
52	84 847	99 798	00 202	85 049	8
53	84 860	99 823	00 177	85 037	7
54	84 873	99 848	00 152	85 024	6
55	84 885	99 874	00 126	85 012	5
56	84 898	99 899	00 101	84 999	4
57	84 911	99 924	00 076	84 986	3
58	84 923	99 949	00 051	84 974	2
59	84 936	99 975	00 025	84 961	1
60	84 949	00 000	00 000	84 949	0
′	log cos −9−	log cot −9−	log tan −10−	log sin −9−	′

TABLE IV.

——◆——

FOR DETERMINING WITH GREATER ACCURACY THAN CAN BE DONE BY MEANS OF TABLE III. :

1. *log sin*, *log tan*, and *log cot*, when the angle is between 0° and 2° ;
2. *log cos*, *log tan*, and *log cot*, when the angle is between 88° and 90° ;
3. The value of the angle when the logarithm of the function does *not* lie between the limits **8. 54 684** and **11. 45 316.**

——◆——

FORMULAS FOR THE USE OF THE NUMBERS **S** AND **T.**

I. When the angle a is between 0° and 2° :

$$\log \sin a = \log a'' + S.$$
$$\log \tan a = \log a'' + T.$$
$$\log \cot a = \text{colog} \tan a.$$

$$\log a'' = \log \sin a - S,$$
$$= \log \tan a - T,$$
$$= \text{colog} \cot a - T.$$

II. When the angle a is between 88° and 90° :

$$\log \cos a = \log (90°-a)'' + S.$$
$$\log \cot a = \log (90°-a)'' + T.$$
$$\log \tan a = \text{colog} \cot a.$$

$$\log (90°-a)'' = \log \cos a - S,$$
$$= \log \cot a - T,$$
$$= \text{colog} \tan a - T,$$
$$\text{and } a = 90° - (90°-a).$$

——∞◦❀◦∞——

VALUES OF S AND T.

a''	S	log sin a	a''	T	log tan a	a	T	log tan a
0		·	0		—	5 146		8. 39 713
	4. 68 557			4. 68 557			4. 68 567	
2 409		8. 06 740	200		6. 98 660	5 424		8. 41 999
	4. 68 556			4. 68 558			4. 68 568	
3 417		8. 21 920	1 726		7. 92 263	5 689		8. 44 072
	4. 68 555			4. 68 559			4. 68 569	
3 823		8. 26 795	2 432		8. 07 156	5 941		8. 45 955
	4. 68 555			4. 68 560			4. 68 570	
4 190		8. 30 776	2 976		8. 15 924	6 184		8. 47 697
	4. 68 554			4. 68 561			4. 68 571	
4 840		8. 37 038	3 434		8. 22 142	6 417		8. 49 305
	4. 68 553			4. 68 562			4. 68 572	
5 414		8. 41 904	3 838		8. 26 973	6 642		8. 50 802
	4. 68 552			4. 68 563			4. 68 573	
5 932		8. 45 872	4 204		8. 30 930	6 859		8. 52 200
	4. 68 551			4. 68 564			4. 68 574	
6 408		8. 49 223	4 540		8. 34 270	7 070		8. 53 516
	4. 68 550			4. 68 565			4. 68 575	
6 633		8. 50 721	4 699		8. 35 766	7 173		8. 54 145
	4. 68 550			4. 68 565			4. 68 575	
6 851		8. 52 125	4 853		8. 37 167	7 274		8. 54 753
	4. 68 549			4. 68 566				
7 267		8. 54 684	5 146		8. 39 713			
a''	S	log sin a	a''	T	log tan a	a	T	log tan a

TABLE V.

THE NATURAL VALUES

OF

SINES, COSINES, TANGENTS, AND COTANGENTS,

IN THE UNIT CIRCLE.

0° — 8°

° '	sin	tan	cot	cos	' °
0 0	0.0000	0.0000	infinite	1.0000	0 90
10	0.0029	0.0029	343.7737	1.0000	50
20	0.0058	0.0058	171.8854	1.0000	40
30	0.0087	0.0087	114.5887	1.0000	30
40	0.0116	0.0116	85.9398	0.9999	20
50	0.0145	0.0145	68.7501	0.9999	10
1 0	0.0175	0.0175	57.2900	0.9998	0 89
° '	cos	cot	tan	sin	' °

| ° '	sin	tan	cot	cos	' °	° '	sin	tan	cot	cos	' °
1 0	0.0175	0.0175	57.2900	0.9998	0 89	5 0	0.0872	0.0875	11.4301	0.9962	0 85
10	0.0204	0.0204	49.1039	0.9998	50	10	0.0901	0.0904	11.0594	0.9959	50
20	0.0233	0.0233	42.9641	0.9997	40	20	0.0929	0.0934	10.7119	0.9957	40
30	0.0262	0.0262	38.1885	0.9997	30	30	0.0958	0.0963	10.3854	0.9954	30
40	0.0291	0.0291	34.3678	0.9996	20	40	0.0987	0.0992	10.0780	0.9951	20
50	0.0320	0.0320	31.2416	0.9995	10	50	0.1016	0.1022	·9.7882	0.9948	10
2 0	0.0349	0.0349	28.6363	0.9994	0 88	6 0	0.1045	0.1051	9.5144	0.9945	0 84
10	0.0378	0.0378	26.4316	0.9993	50	10	0.1074	0.1080	9.2553	0.9942	50
20	0.0407	0.0407	24.5418	0.9992	40	20	0.1103	0.1110	9.0098	0.9939	40
30	0.0436	0.0437	22.9038	0.9990	30	30	0.1132	0.1139	8.7769	0.9936	30
40	0.0465	0.0466	21.4704	0.9989	20	40	0.1161	0.1169	8.5555	0.9932	20
50	0.0494	0.0495	20.2056	0.9988	10	50	0.1190	0.1198	8.3450	0.9929	10
3 0	0.0523	0.0524	19.0811	0.9986	0 87	7 0	0.1219	0.1228	8.1443	0.9925	0 83
10	0.0552	0.0553	18.0750	0.9985	50	10	0.1248	0.1257	7.9530	0.9922	50
20	0.0581	0.0582	17.1693	0.9983	40	20	0.1276	0.1287	7.7704	0.9918	40
30	0.0610	0.0612	16.3499	0.9981	30	30	0.1305	0.1317	7.5958	0.9914	30
40	0.0640	0.0641	15.6048	0.9980	20	40	0.1334	0.1346	7.4287	0.9911	20
50	0.0669	0.0670	14.9244	0.9978	10	50	0.1363	0.1376	7.2687	0.9907	10
4 0	0.0698	0.0699	14.3007	0.9976	0 86	8 0	0.1392	0.1405	7.1154	0.9903	0 82
10	0.0727	0.0729	13.7267	0.9974	50	10	0.1421	0.1435	6.9682	0.9899	50
20	0.0756	0.0758	13.1969	0.9971	40	20	0.1449	0.1465	6.8269	0.9894	40
30	0.0785	0.0787	12.7062	0.9969	30	30	0.1478	0.1495	6.6912	0.9890	30
40	0.0814	0.0816	12.2505	0.9967	20	40	0.1507	0.1524	6.5606	0.9886	20
50	0.0843	0.0846	11.8262	0.9964	10	50	0.1536	0.1554	6.4348	0.9881	10
5 0	0.0872	0.0875	11.4301	0.9962	0 85	9 0	0.1564	0.1584	6.3138	0.9877	0 81
° '	cos	cot	tan	sin	' °	° '	cos	cot	tan	sin	' °

° '	sin	tan	cot	cos	' °
9 0	0.1564	0.1584	6.3138	0.9877	0 81
10	0.1593	0.1614	6.1970	0.9872	50
20	0.1622	0.1644	6.0844	0.9868	40
30	0.1650	0.1673	5.9758	0.9863	30
40	0.1679	0.1703	5.8708	0.9858	20
50	0.1708	0.1733	5.7694	0.9853	10
10 0	0.1736	0.1763	5.6713	0.9848	0 80
10	0.1765	0.1793	5.5764	0.9843	50
20	0.1794	0.1823	5.4845	0.9838	40
30	0.1822	0.1853	5.3955	0.9833	30
40	0.1851	0.1883	5.3093	0.9827	20
50	0.1880	0.1914	5.2257	0.9822	10
11 0	0.1908	0.1944	5.1446	0.9816	0 79
10	0.1937	0.1974	5.0658	0.9811	50
20	0.1965	0.2004	4.9894	0.9805	40
30	0.1994	0.2035	4.9152	0.9799	30
40	0.2022	0.2065	4.8430	0.9793	20
50	0.2051	0.2095	4.7729	0.9787	10
12 0	0.2079	0.2126	4.7046	0.9781	0 78
10	0.2108	0.2156	4.6382	0.9775	50
20	0.2136	0.2186	4.5736	0.9769	40
30	0.2164	0.2217	4.5107	0.9763	30
40	0.2193	0.2247	4.4494	0.9757	20
50	0.2221	0.2278	4.3897	0.9750	10
13 0	0.2250	0.2309	4.3315	0.9744	0 77
10	0.2278	0.2339	4.2747	0.9737	50
20	0.2306	0.2370	4.2193	0.9730	40
30	0.2334	0.2401	4.1653	0.9724	30
40	0.2363	0.2432	4.1126	0.9717	20
50	0.2391	0.2462	4.0611	0.9710	10
14 0	0.2419	0.2493	4.0108	0.9703	0 76
10	0.2447	0.2524	3.9617	0.9696	50
20	0.2476	0.2555	3.9136	0.9689	40
30	0.2504	0.2586	3.8667	0.9681	30
40	0.2532	0.2617	3.8208	0.9674	20
50	0.2560	0.2648	3.7760	0.9667	10
15 0	0.2588	0.2679	3.7321	0.9659	0 75
10	0.2616	0.2711	3.6891	0.9652	50
20	0.2644	0.2742	3.6470	0.9644	40
30	0.2672	0.2773	3.6059	0.9636	30
40	0.2700	0.2805	3.5656	0.9628	20
50	0.2728	0.2836	3.5261	0.9621	10
16 0	0.2756	0.2867	3.4874	0.9613	0 74
10	0.2784	0.2899	3.4495	0.9605	50
20	0.2812	0.2931	3.4124	0.9596	40
30	0.2840	0.2962	3.3759	0.9588	30
40	0.2868	0.2994	3.3402	0.9580	20
50	0.2896	0.3026	3.3052	0.9572	10
17 0	0.2924	0.3057	3.2709	0.9563	0 73
10	0.2952	0.3089	3.2371	0.9555	50
20	0.2979	0.3121	3.2041	0.9546	40
30	0.3007	0.3153	3.1716	0.9537	30
40	0.3035	0.3185	3.1397	0.9528	20
50	0.3062	0.3217	3.1084	0.9520	10
18 0	0.3090	0.3249	3.0777	0.9511	0 72
° '	cos	cot	tan	sin	' °

° '	sin	tan	cot	cos	' °
18 0	0.3090	0.3249	3.0777	0.9511	0 72
10	0.3118	0.3281	3.0475	0.9502	50
20	0.3145	0.3314	3.0178	0.9492	40
30	0.3173	0.3346	2.9887	0.9483	30
40	0.3201	0.3378	2.9600	0.9474	20
50	0.3228	0.3411	2.9319	0.9465	10
19 0	0.3256	0.3443	2.9042	0.9455	0 71
10	0.3283	0.3476	2.8770	0.9446	50
20	0.3311	0.3508	2.8502	0.9436	40
30	0.3338	0.3541	2.8239	0.9426	30
40	0.3365	0.3574	2.7980	0.9417	20
50	0.3393	0.3607	2.7725	0.9407	10
20 0	0.3420	0.3640	2.7475	0.9397	0 70
10	0.3448	0.3673	2.7228	0.9387	50
20	0.3475	0.3706	2.6985	0.9377	40
30	0.3502	0.3739	2.6746	0.9367	30
40	0.3529	0.3772	2.6511	0.9356	20
50	0.3557	0.3805	2.6279	0.9346	10
21 0	0.3584	0.3839	2.6051	0.9336	0 69
10	0.3611	0.3872	2.5826	0.9325	50
20	0.3638	0.3906	2.5605	0.9315	40
30	0.3665	0.3939	2.5386	0.9304	30
40	0.3692	0.3973	2.5172	0.9293	20
50	0.3719	0.4006	2.4960	0.9283	10
22 0	0.3746	0.4040	2.4751	0.9272	0 68
10	0.3773	0.4074	2.4545	0.9261	50
20	0.3800	0.4108	2.4342	0.9250	40
30	0.3827	0.4142	2.4142	0.9239	30
40	0.3854	0.4176	2.3945	0.9228	20
50	0.3881	0.4210	2.3750	0.9216	10
23 0	0.3907	0.4245	2.3559	0.9205	0 67
10	0.3934	0.4279	2.3369	0.9194	50
20	0.3961	0.4314	2.3183	0.9182	40
30	0.3987	0.4348	2.2998	0.9171	30
40	0.4014	0.4383	2.2817	0.9159	20
50	0.4041	0.4417	2.2637	0.9147	10
24 0	0.4067	0.4452	2.2460	0.9135	0 66
10	0.4094	0.4487	2.2286	0.9124	50
20	0.4120	0.4522	2.2113	0.9112	40
30	0.4147	0.4557	2.1943	0.9100	30
40	0.4173	0.4592	2.1775	0.9088	20
50	0.4200	0.4628	2.1609	0.9075	10
25 0	0.4226	0.4663	2.1445	0.9063	0 65
10	0.4253	0.4699	2.1283	0.9051	50
20	0.4279	0.4734	2.1123	0.9038	40
30	0.4305	0.4770	2.0965	0.9026	30
40	0.4331	0.4806	2.0809	0.9013	20
50	0.4358	0.4841	2.0655	0.9001	10
26 0	0.4384	0.4877	2.0503	0.8988	0 64
10	0.4410	0.4913	2.0353	0.8975	50
20	0.4436	0.4950	2.0204	0.8962	40
30	0.4462	0.4986	2.0057	0.8949	30
40	0.4488	0.5022	1.9912	0.8936	20
50	0.4514	0.5059	1.9768	0.8923	10
27 0	0.4540	0.5095	1.9626	0.8910	0 63
° '	cos	cot	tan	sin	' °

° '	sin	tan	cot	cos	' °	° '	sin	tan	cot	cos	' °
27 0	0.4540	0.5095	1.9626	0.8910	**0 63**	**36 0**	0.5878	0.7265	1.3764	0.8090	**0 54**
10	0.4566	0.5132	1.9486	0.8897	50	10	0.5901	0.7310	1.3680	0.8073	50
20	0.4592	0.5169	1.9347	0.8884	40	20	0.5925	0.7355	1.3597	0.8056	40
30	0.4617	0.5206	1.9210	0.8870	30	30	0.5948	0.7400	1.3514	0.8039	30
40	0.4643	0.5243	1.9074	0.8857	20	40	0.5972	0.7445	1.3432	0.8021	20
50	0.4669	0.5280	1.8940	0.8843	10	50	0.5995	0.7490	1.3351	0.8004	10
28 0	0.4695	0.5317	1.8807	0.8829	**0 62**	**37 0**	0.6018	0.7536	1.3270	0.7986	**0 53**
10	0.4720	0.5354	1.8676	0.8816	50	10	0.6041	0.7581	1.3190	0.7969	50
20	0.4746	0.5392	1.8546	0.8802	40	20	0.6065	0.7627	1.3111	0.7951	40
30	0.4772	0.5430	1.8418	0.8788	30	30	0.6088	0.7673	1.3032	0.7934	30
40	0.4797	0.5467	1.8291	0.8774	20	40	0.6111	0.7720	1.2954	0.7916	20
50	0.4823	0.5505	1.8165	0.8760	10	50	0.6134	0.7766	1.2876	0.7898	10
29 0	0.4848	0.5543	1.8040	0.8746	**0 61**	**38 0**	0.6157	0.7813	1.2799	0.7880	**0 52**
10	0.4874	0.5581	1.7917	0.8732	50	10	0.6180	0.7860	1.2723	0.7862	50
20	0.4899	0.5619	1.7796	0.8718	40	20	0.6202	0.7907	1.2647	0.7844	40
30	0.4924	0.5658	1.7675	0.8704	30	30	0.6225	0.7954	1.2572	0.7826	30
40	0.4950	0.5696	1.7556	0.8689	20	40	0.6248	0.8002	1.2497	0.7808	20
50	0.4975	0.5735	1.7437	0.8675	10	50	0.6271	0.8050	1.2423	0.7790	10
30 0	0.5000	0.5774	1.7321	0.8660	**0 60**	**39 0**	0.6293	0.8098	1.2349	0.7771	**0 51**
10	0.5025	0.5812	1.7205	0.8646	50	10	0.6316	0.8146	1.2276	0.7753	50
20	0.5050	0.5851	1.7090	0.8631	40	20	0.6338	0.8195	1.2203	0.7735	40
30	0.5075	0.5890	1.6977	0.8616	30	30	0.6361	0.8243	1.2131	0.7716	30
40	0.5100	0.5930	1.6864	0.8601	20	40	0.6383	0.8292	1.2059	0.7698	20
50	0.5125	0.5969	1.6753	0.8587	10	50	0.6406	0.8342	1.1988	0.7679	10
31 0	0.5150	0.6000	1.6643	0.8572	**0 59**	**40 0**	0.6428	0.8391	1.1918	0.7660	**0 50**
10	0.5175	0.6048	1.6534	0.8557	50	10	0.6450	0.8441	1.1847	0.7642	50
20	0.5200	0.6088	1.6426	0.8542	40	20	0.6472	0.8491	1.1778	0.7623	40
30	0.5225	0.6128	1.6319	0.8526	30	30	0.6494	0.8541	1.1708	0.7604	30
40	0.5250	0.6168	1.6212	0.8511	20	40	0.6517	0.8591	1.1640	0.7585	20
50	0.5275	0.6208	1.6107	0.8496	10	50	0.6539	0.8642	1.1571	0.7566	10
32 0	0.5299	0.6249	1.6003	0.8480	**0 58**	**41 0**	0.6561	0.8693	1.1504	0.7547	**0 49**
10	0.5324	0.6289	1.5900	0.8465	50	10	0.6583	0.8744	1.1436	0.7528	50
20	0.5348	0.6330	1.5798	0.8450	40	20	0.6604	0.8796	1.1369	0.7509	40
30	0.5373	0.6371	1.5697	0.8434	30	30	0.6626	0.8847	1.1303	0.7490	30
40	0.5398	0.6412	1.5597	0.8418	20	40	0.6648	0.8899	1.1237	0.7470	20
50	0.5422	0.6453	1.5497	0.8403	10	50	0.6670	0.8952	1.1171	0.7451	10
33 0	0.5446	0.6494	1.5399	0.8387	**0 57**	**42 0**	0.6691	0.9004	1.1106	0.7431	**0 48**
10	0.5471	0.6536	1.5301	0.8371	50	10	0.6713	0.9057	1.1041	0.7412	50
20	0.5495	0.6577	1.5204	0.8355	40	20	0.6734	0.9110	1.0977	0.7392	40
30	0.5519	0.6619	1.5108	0.8339	30	30	0.6756	0.9163	1.0913	0.7373	30
40	0.5544	0.6661	1.5013	0.8323	20	40	0.6777	0.9217	1.0850	0.7353	20
50	0.5568	0.6703	1.4919	0.8307	10	50	0.6799	0.9271	1.0786	0.7333	10
34 0	0.5592	0.6745	1.4826	0.8290	**0 56**	**43 0**	0.6820	0.9325	1.0724	0.7314	**0 47**
10	0.5616	0.6787	1.4733	0.8274	50	10	0.6841	0.9380	1.0661	0.7294	50
20	0.5640	0.6830	1.4641	0.8258	40	20	0.6862	0.9435	1.0599	0.7274	40
30	0.5664	0.6873	1.4550	0.8241	30	30	0.6884	0.9490	1.0538	0.7254	30
40	0.5688	0.6916	1.4460	0.8225	20	40	0.6905	0.9545	1.0477	0.7234	20
50	0.5712	0.6959	1.4370	0.8208	10	50	0.6926	0.9601	1.0416	0.7214	10
35 0	0.5736	0.7002	1.4281	0.8192	**0 55**	**44 0**	0.6947	0.9657	1.0355	0.7193	**0 46**
10	0.5760	0.7046	1.4193	0.8175	50	10	0.6967	0.9713	1.0295	0.7173	50
20	0.5783	0.7089	1.4106	0.8158	40	20	0.6988	0.9770	1.0235	0.7153	40
30	0.5807	0.7133	1.4019	0.8141	30	30	0.7009	0.9827	1.0176	0.7133	30
40	0.5831	0.7177	1.3934	0.8124	20	40	0.7030	0.9884	1.0117	0.7112	20
50	0.5854	0.7221	1.3848	0.8107	10	50	0.7050	0.9942	1.0058	0.7092	10
36 0	0.5878	0.7265	1.3764	0.8090	**0 54**	**45 0**	0.7071	1.0000	1.0000	0.7071	**0 45**
° '	cos	cot	tan	sin	' °	° '	cos	cot	tan	sin	' °

If $N=$ the radius of the circle, the circumference $= 2\pi N$.

If $N=$ the radius of the circle, the area $= \pi N^2$.

If $N=$ the circumference of the circle, the radius $= \dfrac{1}{2\pi}N$.

If $N=$ the circumference of the circle, the area $= \dfrac{1}{4\pi}N^2$.

N	$2\pi N$	πN^2	$\frac{1}{2\pi}N$	$\frac{1}{4\pi}N^2$	N	$2\pi N$	πN^2	$\frac{1}{2\pi}N$	$\frac{1}{4\pi}N^2$
0	0.00	0.0	0.000	0.00	50	314.16	7 854	7.96	198.94
1	6.28	3.1	0.159	0.08	51	320.44	8 171	8.12	206.98
2	12.57	12.6	0.318	0.32	52	326.73	8 495	8.28	215.18
3	18.85	28.3	0.477	0.72	53	333.01	8 825	8.44	223.53
4	25.13	50.3	0.637	1.27	54	339.29	9 161	8.59	232.05
5	31.42	78.5	0.796	1.99	55	345.58	9 503	8.75	240.72
6	37.70	113.1	0.955	2.86	56	351.86	9 852	8.91	249.55
7	43.98	153.9	1.114	3.90	57	358.14	10 207	9.07	258.55
8	50.27	201.1	1.273	5.09	58	364.42	10 568	9.23	267.70
9	56.55	254.5	1.432	6.45	59	370.71	10 936	9.39	277.01
10	62.83	314.2	1.592	7.96	60	376.99	11 310	9.55	286.48
11	69.12	380.1	1.751	9.63	61	383.27	11 690	9.71	296.11
12	75.40	452.4	1.910	11.46	62	389.56	12 076	9.87	305.90
13	81.68	530.9	2.069	13.45	63	395.84	12 469	10.03	315.84
14	87.96	615.8	2.228	15.60	64	402.12	12 868	10.19	325.95
15	94.25	706.9	2.387	17.90	65	408.41	13 273	10.35	336.21
16	100.53	804.2	2.546	20.37	66	414.69	13 685	10.50	346.64
17	106.81	907.9	2.706	23.00	67	420.97	14 103	10.66	357.22
18	113.10	1 017.9	2.865	25.78	68	427.26	14 527	10.82	367.97
19	119.38	1 134.1	3.024	28.73	69	433.54	14 957	10.98	378.87
20	125.66	1 256.6	3.183	31.83	70	439.82	15 394	11.14	389.93
21	131.95	1 385.4	3.342	35.09	71	446.11	15 837	11.30	401.15
22	138.23	1 520.5	3.501	38.52	72	452.39	16 286	11.46	412.53
23	144.51	1 661.9	3.661	42.10	73	458.67	16 742	11.62	424.07
24	150.80	1 809.6	3.820	45.84	74	464.96	17 203	11.78	435.77
25	157.08	1 963.5	3.979	49.74	75	471.24	17 671	11.94	447.62
26	163.36	2 123.7	4.138	53.79	76	477.52	18 146	12.10	459.64
27	169.65	2 290.2	4.297	58.01	77	483.81	18 627	12.25	471.81
28	175.93	2 463.0	4.456	62.39	78	490.09	19 113	12.41	484.15
29	182.21	2 642.1	4.615	66.92	79	496.37	19 607	12.57	496.64
30	188.50	2 827.4	4.775	71.62	80	502.65	20 106	12.73	509.30
31	194.78	3 019.1	4.934	76.47	81	508.94	20 612	12.89	522.11
32	201.06	3 217.0	5.093	81.49	82	515.22	21 124	13.05	535.08
33	207.35	3 421.2	5.252	86.66	83	521.50	21 642	13.21	548.21
34	213.63	3 631.7	5.411	91.99	84	527.79	22 167	13.37	561.50
35	219.91	3 848.5	5.570	97.48	85	534.07	22 698	13.53	574.95
36	226.19	4 071.5	5.730	103.13	86	540.35	23 235	13.69	588.55
37	232.48	4 300.8	5.889	108.94	87	546.64	23 779	13.85	602.32
38	238.76	4 536.5	6.048	114.91	88	552.92	24 328	14.01	616.25
39	245.04	4 778.4	6.207	121.04	89	559.20	24 885	14.16	630.33
40	251.33	5 026.5	6.366	127.32	90	565.49	25 447	14.32	644.58
41	257.61	5 281.0	6.525	133.77	91	571.77	26 016	14.48	658.98
42	263.89	5 541.8	6.685	140.37	92	578.05	26 590	14.64	673.54
43	270.18	5 808.8	6.844	147.14	93	584.34	27 172	14.80	688.27
44	276.46	6 082.1	7.003	154.06	94	590.62	27 759	14.96	703.15
45	282.74	6 361.7	7.162	161.14	95	596.90	28 353	15.12	718.19
46	289.03	6 647.6	7.321	168.39	96	603.19	28 953	15.28	733.39
47	295.31	6 939.8	7.480	175.79	97	609.47	29 559	15.44	748.74
48	301.59	7 238.2	7.639	183.35	98	615.75	30 172	15.60	764.26
49	307.88	7 543.0	7.799	191.07	99	622.04	30 791	15.76	779.94
50	314.16	7 854.0	7.958	198.94	100	628.32	31 416	15.92	795.77
N	$2\pi N$	πN^2	$\frac{1}{2\pi}N$	$\frac{1}{4\pi}N^2$	N	$2\pi N$	πN^2	$\frac{1}{2\pi}N$	$\frac{1}{4\pi}N^2$
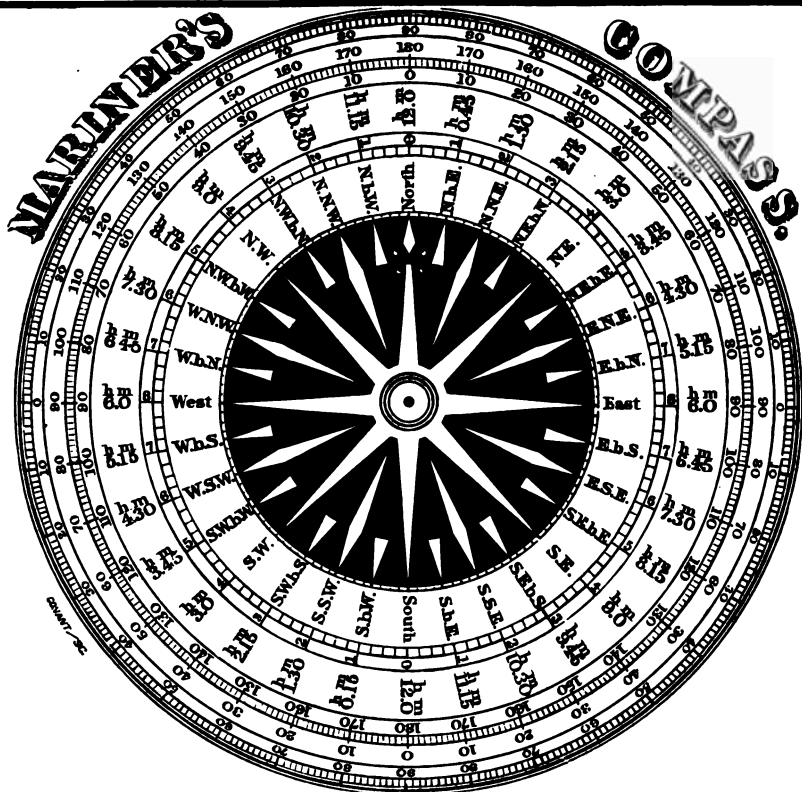
A TABLE OF THE ANGLES

Which every Point and Quarter Point of the Compass makes with the Meridian.

North.		Points.	°	′	″	Points.	South.	
		0 – ¼	2	48	45	0 – ¼		
		0 – ½	5	37	30	0 – ½		
		0 – ¾	8	26	15	0 – ¾		
N. by E.	N. by W.	1	11	15	0	1	S. by E.	S. by W.
		1 – ¼	14	3	45	1 – ¼		
		1 – ½	16	52	30	1 – ½		
		1 – ¾	19	41	15	1 – ¾		
N.N.E.	N.N.W.	2	22	30	0	2	S.S.E.	S.S.W.
		2 – ¼	25	18	45	2 – ¼		
		2 – ½	28	7	30	2 – ½		
		2 – ¾	30	56	15	2 – ¾		
N.E. by N.	N.W. by N.	3	33	45	0	3	S.E. by S.	S.W. by S.
		3 – ¼	36	33	45	3 – ¼		
		3 – ½	39	22	30	3 – ½		
		3 – ¾	42	11	15	3 – ¾		
N.E.	N.W.	4	45	0	0	4	S.E.	S.W.
		4 – ¼	47	48	45	4 – ¼		
		4 – ½	50	37	30	4 – ½		
		4 – ¾	53	26	15	4 – ¾		
N.E. by E.	N.W. by W.	5	56	15	0	5	S.E. by E.	S.W. by W.
		5 – ¼	59	3	45	5 – ¼		
		5 – ½	61	52	30	5 – ½		
		5 – ¾	64	41	15	5 – ¾		
E.N.E.	W.N.W.	6	67	30	0	6	E.S.E.	W.S.W.
		6 – ¼	70	18	45	6 – ¼		
		6 – ½	73	7	30	6 – ½		
		6 – ¾	75	56	15	6 – ¾		
E. by N.	W. by N.	7	78	45	0	7	E. by S.	W. by S.
		7 – ¼	81	33	45	7 – ¼		
		7 – ½	84	22	30	7 – ½		
		7 – ¾	87	11	15	7 – ¾		
East.	West.	8	90	0	0	8	East.	West.

Bearing.	Distance 1.		Distance 2.		Distance 3.		Distance 4.		Distance 5.		Bearing.
° ′	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	° ′
0 15	1.000	0.004	2.000	0.009	3.000	0.013	4.000	0.017	5.000	0.022	89 45
30	1.000	0.009	2.000	0.017	3.000	0.026	4.000	0.035	5.000	0.044	30
45	1.000	0.013	2.000	0.026	3.000	0.039	4.000	0.052	5.000	0.065	15
1 0	1.000	0.017	2.000	0.035	3.000	0.052	3.999	0.070	4.999	0.087	89 0
15	1.000	0.022	2.000	0.044	2.999	0.065	3.999	0.087	4.999	0.109	45
30	1.000	0.026	1.999	0.052	2.999	0.079	3.999	0.105	4.998	0.131	30
45	1.000	0.031	1.999	0.061	2.999	0.092	3.998	0.122	4.998	0.153	15
2 0	0.999	0.035	1.999	0.070	2.998	0.105	3.998	0.140	4.997	0.174	88 0
15	0.999	0.039	1.998	0.079	2.998	0.118	3.997	0.157	4.996	0.196	45
30	0.999	0.044	1.998	0.087	2.997	0.131	3.996	0.174	4.995	0.218	30
45	0.999	0.048	1.998	0.096	2.997	0.144	3.995	0.192	4.994	0.240	15
3 0	0.999	0.052	1.997	0.105	2.996	0.157	3.995	0.209	4.993	0.262	87 0
15	0.998	0.057	1.997	0.113	2.995	0.170	3.994	0.227	4.992	0.283	45
30	0.998	0.061	1.996	0.122	2.994	0.183	3.993	0.244	4.991	0.305	30
45	0.998	0.065	1.996	0.131	2.994	0.196	3.991	0.262	4.989	0.327	15
4 0	0.998	0.070	1.995	0.140	2.993	0.209	3.990	0.279	4.988	0.349	86 0
15	0.997	0.074	1.995	0.148	2.992	0.222	3.989	0.296	4.986	0.371	45
30	0.997	0.078	1.994	0.157	2.991	0.235	3.988	0.314	4.985	0.392	30
45	0.997	0.083	1.993	0.166	2.990	0.248	3.986	0.331	4.983	0.414	15
5 0	0.996	0.087	1.992	0.174	2.989	0.261	3.985	0.349	4.981	0.436	85 0
15	0.996	0.092	1.992	0.183	2.987	0.275	3.983	0.366	4.979	0.458	45
30	0.995	0.096	1.991	0.192	2.986	0.288	3.982	0.383	4.977	0.479	30
45	0.995	0.100	1.990	0.200	2.985	0.301	3.980	0.401	4.975	0.501	15
6 0	0.995	0.105	1.989	0.209	2.984	0.314	3.978	0.418	4.973	0.523	84 0
15	0.994	0.109	1.988	0.218	2.982	0.327	3.976	0.435	4.970	0.544	45
30	0.994	0.113	1.987	0.226	2.981	0.340	3.974	0.453	4.968	0.566	30
45	0.993	0.118	1.986	0.235	2.979	0.353	3.972	0.470	4.965	0.588	15
7 0	0.993	0.122	1.985	0.244	2.978	0.366	3.970	0.487	4.963	0.609	83 0
15	0.992	0.126	1.984	0.252	2.976	0.379	3.968	0.505	4.960	0.631	45
30	0.991	0.131	1.983	0.261	2.974	0.392	3.966	0.522	4.957	0.653	30
45	0.991	0.135	1.982	0.270	2.973	0.405	3.963	0.539	4.954	0.674	15
8 0	0.990	0.139	1.981	0.278	2.971	0.418	3.961	0.557	4.951	0.696	82 0
15	0.990	0.143	1.979	0.287	2.969	0.430	3.959	0.574	4.948	0.717	45
30	0.989	0.148	1.978	0.296	2.967	0.443	3.956	0.591	4.945	0.739	30
45	0.988	0.152	1.977	0.304	2.965	0.456	3.953	0.608	4.942	0.761	15
9 0	0.988	0.156	1.975	0.313	2.963	0.469	3.951	0.626	4.938	0.782	81 0
15	0.987	0.161	1.974	0.321	2.961	0.482	3.948	0.643	4.935	0.804	45
30	0.986	0.165	1.973	0.330	2.959	0.495	3.945	0.660	4.931	0.825	30
45	0.986	0.169	1.971	0.339	2.957	0.508	3.942	0.677	4.928	0.847	15
10 0	0.985	0.174	1.970	0.347	2.954	0.521	3.939	0.695	4.924	0.868	80 0
15	0.984	0.178	1.968	0.356	2.952	0.534	3.936	0.712	4.920	0.890	45
30	0.983	0.182	1.967	0.364	2.950	0.547	3.933	0.729	4.916	0.911	30
45	0.982	0.187	1.965	0.373	2.947	0.560	3.930	0.746	4.912	0.933	15
11 0	0.982	0.191	1.963	0.382	2.945	0.572	3.927	0.763	4.908	0.954	79 0
15	0.981	0.195	1.962	0.390	2.942	0.585	3.923	0.780	4.904	0.975	45
30	0.980	0.199	1.960	0.399	2.940	0.598	3.920	0.797	4.900	0.997	30
45	0.979	0.204	1.958	0.407	2.937	0.611	3.916	0.815	4.895	1.018	15
12 0	0.978	0.208	1.956	0.416	2.934	0.624	3.913	0.832	4.891	1.040	78 0
15	0.977	0.212	1.954	0.424	2.932	0.637	3.909	0.849	4.886	1.061	45
30	0.976	0.216	1.953	0.433	2.929	0.649	3.905	0.866	4.881	1.082	30
45	0.975	0.221	1.951	0.441	2.926	0.662	3.901	0.883	4.877	1.103	15
13 0	0.974	0.225	1.949	0.450	2.923	0.675	3.897	0.900	4.872	1.125	77 0
15	0.973	0.229	1.947	0.458	2.920	0.688	3.894	0.917	4.867	1.146	45
30	0.972	0.233	1.945	0.467	2.917	0.700	3.889	0.934	4.862	1.167	30
45	0.971	0.238	1.943	0.475	2.914	0.713	3.885	0.951	4.857	1.188	15
14 0	0.970	0.242	1.941	0.484	2.911	0.726	3.881	0.968	4.851	1.210	76 0
15	0.969	0.246	1.938	0.492	2.908	0.738	3.877	0.985	4.846	1.231	45
30	0.968	0.250	1.936	0.501	2.904	0.751	3.873	1.002	4.841	1.252	30
45	0.967	0.255	1.934	0.509	2.901	0.764	3.868	1.018	4.835	1.273	15
15 0	0.966	0.259	1.932	0.518	2.898	0.776	3.864	1.035	4.830	1.294	75 0
° ′	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	° ′
Bearing.	Distance 1.		Distance 2.		Distance 3.		Distance 4.		Distance 5.		Bearing.

75°— 90°

Bearing.	Distance 6.		Distance 7.		Distance 8.		Distance 9.		Distance 10.		Bearing.
° ′	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	° ′
0 15	6.000	0.026	7.000	0.031	8.000	0.035	9.000	0.039	10.000	0.044	89 45
30	6.000	0.052	7.000	0.061	8.000	0.070	9.000	0.079	10.000	0.087	30
45	5.999	0.079	6.999	0.092	7.999	0.105	8.999	0.118	9.999	0.131	15
1 0	5.999	0.105	6.999	0.122	7.999	0.140	8.999	0.157	9.999	0.175	89 0
15	5.999	0.131	6.998	0.153	7.998	0.175	8.998	0.196	9.998	0.218	45
30	5.998	0.157	6.998	0.183	7.997	0.209	8.997	0.236	9.997	0.262	30
45	5.997	0.183	6.997	0.214	7.996	0.244	8.996	0.275	9.995	0.305	15
2 0	5.996	0.209	6.996	0.244	7.995	0.279	8.995	0.314	9.994	0.349	88 0
15	5.995	0.236	6.995	0.275	7.994	0.314	8.993	0.353	9.992	0.393	45
30	5.994	0.262	6.993	0.305	7.992	0.349	8.991	0.393	9.991	0.436	30
45	5.993	0.288	6.992	0.336	7.991	0.384	8.990	0.432	9.989	0.480	15
3 0	5.992	0.314	6.990	0.366	7.989	0.419	8.988	0.471	9.986	0.523	87 0
15	5.990	0.340	6.989	0.397	7.987	0.454	8.986	0.510	9.984	0.567	45
30	5.989	0.366	6.987	0.427	7.985	0.488	8.983	0·549	9.981	0.611	30
45	5.987	0.392	6.985	0.458	7.983	0.523	8.981	0.589	9.979	0.654	15
4 0	5.985	0.419	6.983	0.488	7.981	0.558	8.978	0.628	9.976	0.698	86 0
15	5.984	0.445	6.981	0.519	7.978	0.593	8.975	0.667	9.973	0.741	45
30	5.982	0.471	6.978	0.549	7.975	0.628	8.972	0.706	9.969	0.785	30
45	5.979	0.497	6.976	0.580	7.973	0.662	8.969	0.745	9.966	0.828	15
5 0	5.977	0.523	6.973	0.610	7.970	0.697	8.966	0.784	9.962	0.872	85 0
15	5.975	0.549	6.971	0.641	7.966	0.732	8.962	0.824	9.958	0.915	45
30	5.972	0.575	6.968	0.671	7.963	0.767	8.959	0.863	9.954	0.959	30
45	5.970	0.601	6.965	0.701	7.960	0.802	8.955	0.902	9.950	1.002	15
6 0	5.967	0.627	6.962	0.732	7.956	0.836	8.951	0.941	9.945	1.045	84 0
15	5.964	0.653	6.958	0.762	7.952	0.871	8.947	0.980	9.941	1.089	45
30	5.961	0.679	6.955	0.792	7.949	0.906	8.942	1.019	9.936	1.132	30
45	5.958	0.705	6.951	0.823	7.945	0.940	8.938	1.058	9.931	1.175	15
7 0	5.955	0.731	6.948	0.853	7.940	0.975	8.933	1.097	9.926	1.219	83 0
15	5.952	0.757	6.944	0.883	7.936	1.010	8.928	1.136	9.920	1.262	45
30	5.949	0.783	6.940	0.914	7.932	1.044	8.923	1.175	9.914	1.305	30
45	5.945	0.809	6.936	0.944	7.927	1.079	8.918	1.214	9.909	1.349	15
8 0	5.942	0.835	6.932	0.974	7.922	1.113	8.912	1.253	9.903	1.392	82 0
15	5.938	0.861	6.928	1.004	7.917	1.148	8.907	1.291	9.897	1.435	45
30	5.934	0.887	6.923	1.035	7.912	1.182	8.901	1.330	9.890	1.478	30
45	5.930	0.913	6.919	1.065	7.907	1.217	8.895	1.369	9.884	1.521	15
9 0	5.926	0.939	6.914	1.095	7.902	1.251	8.889	1.408	9.877	1.564	81 0
15	5.922	0.964	6.909	1.125	7.896	1.286	8.883	1.447	9.870	1.607	45
30	5.918	0.990	6.904	1.155	7.890	1.320	8.877	1.485	9.863	1.651	30
45	5.913	1.016	6.899	1.185	7.884	1.355	8.870	1.524	9.856	1.694	15
10 0	5.909	1.042	6.894	1.216	7.878	1.389	8.863	1.563	9.848	1.737	80 0
15	5.904	1.068	6.888	1.246	7.872	1.424	8.856	1.601	9.840	1.779	45
30	5.900	1.093	6.883	1.276	7.866	1.458	8.849	1.640	9.833	1.822	30
45	5.895	1.119	6.877	1.306	7.860	1.492	8.842	1.679	9.825	1.865	15
11 0	5.890	1.145	6.871	1.336	7.853	1.526	8.835	1.717	9.816	1.908	79 0
15	5.885	1.171	6.866	1.366	7.846	1.561	8.827	1.756	9.808	1.951	45
30	5.880	1.196	6.859	1.396	7.839	1.595	8.819	1.794	9.799	1.994	30
45	5.874	1.222	6.853	1.425	7.832	1.629	8.811	1.833	9.791	2.036	15
12 0	5.869	1.247	6.847	1.455	7.825	1.663	8.803	1.871	9.782	2.079	78 0
15	5.863	1.273	6.841	1.485	7.818	1.697	8.795	1.910	9.772	2.122	45
30	5.858	1.299	6.834	1.515	7.810	1.732	8.787	1.948	9.763	2.164	30
45	5.852	1.324	6.827	1.545	7.803	1.766	8.778	1.986	9.753	2.207	15
13 0	5.846	1.350	6.821	1.575	7.795	1.800	8.769	2.025	9.744	2.250	77 0
15	5.840	1.375	6.814	1.604	7.787	1.834	8.760	2.063	9.734	2.292	45
30	5.834	1.401	6.807	1.634	7.779	1.868	8.751	2.101	9.724	2.335	30
45	5.828	1.426	6.799	1.664	7.771	1.902	8.742	2.139	9.713	2.377	15
14 0	5.822	1.452	6.792	1.693	7.762	1.935	8.733	2.177	9.703	2.419	76 0
15	5.815	1.477	6.785	1.723	7.754	1.969	8.723	2.215	9.692	2.462	45
30	5.809	1.502	6.777	1.753	7.745	2.003	8.713	2.253	9.682	2.504	30
45	5.802	1.528	6.769	1.782	7.736	2.037	8.703	2.291	9.671	2.546	15
15 0	5.796	1.553	6.761	1.812	7.727	2.071	8.693	2.329	9.659	2.588	75 0
° ′	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	° ′
Bearing.	Distance 6.		Distance 7.		Distance 8.		Distance 9.		Distance 10.		Bearing.

Bearing.	Distance 1.		Distance 2.		Distance 3.		Distance 4.		Distance 5.		Bearing.
° ′	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	° ′
15 15	0.965	0.263	1.930	0.526	2.894	0.789	3.859	1.052	4.824	1.315	**74 45**
30	0.964	0.267	1.927	0.534	2.891	0.802	3.855	1.069	4.818	1.336	30
45	0.962	0.271	1.925	0.543	2.887	0.814	3.850	1.086	4.812	1.357	15
16 0	0.961	0.276	1.923	0.551	2.884	0.827	3.845	1.103	4.806	1.378	**74 0**
15	0.960	0.280	1.920	0.560	2.880	0.839	3.840	1.119	4.800	1.399	45
30	0.959	0.284	1.918	0.568	2.876	0.852	3.835	1.136	4.794	1.420	30
45	0.958	0.288	1.915	0.576	2.873	0.865	3.830	1.153	4.788	1.441	15
17 0	0.956	0.292	1.913	0.585	2.869	0.877	3.825	1.169	4.782	1.462	**73 0**
15	0.955	0.297	1.910	0.593	2.865	0.890	3.820	1.186	4.775	1.483	45
30	0.954	0.301	1.907	0.601	2.861	0.902	3.815	1.203	4.769	1.504	30
45	0.952	0.305	1.905	0.610	2.857	0.915	3.810	1.220	4.762	1.524	15
18 0	0.951	0.309	1.902	0.618	2.853	0.927	3.804	1.236	4.755	1.545	**72 0**
15	0.950	0.313	1.899	0.626	2.849	0.939	3.799	1.253	4.748	1.566	45
30	0.948	0.317	1.897	0.635	2.845	0.952	3.793	1.269	4.742	1.587	30
45	0.947	0.321	1.894	0.643	2.841	0.964	3.788	1.286	4.735	1.607	15
19 0	0.946	0.326	1.891	0.651	2.837	0.977	3.782	1.302	4.728	1.628	**71 0**
15	0.944	0.330	1.888	0.659	2.832	0.989	3.776	1.319	4.720	1.648	45
30	0.943	0.334	1.885	0.668	2.828	1.001	3.771	1.335	4.713	1.669	30
45	0.941	0.338	1.882	0.676	2.824	1.014	3.765	1.352	4.706	1.690	15
20 0	0.940	0.342	1.879	0.684	2.819	1.026	3.759	1.368	4.698	1.710	**70 0**
15	0.938	0.346	1.876	0.692	2.815	1.038	3.753	1.384	4.691	1.731	45
30	0.937	0.350	1.873	0.700	2.810	1.051	3.747	1.401	4.683	1.751	30
45	0.935	0.354	1.870	0.709	2.805	1.063	3.741	1.417	4.676	1.771	15
21 0	0.934	0.358	1.867	0.717	2.801	1.075	3.734	1.433	4.668	1.792	**69 0**
15	0.932	0.362	1.864	0.725	2.796	1.087	3.728	1.450	4.660	1.812	45
30	0.930	0.367	1.861	0.733	2.791	1.100	3.722	1.466	4.652	1.833	30
45	0.929	0.371	1.858	0.741	2.786	1.112	3.715	1.482	4.644	1.853	15
22 0	0.927	0.375	1.854	0.749	2.782	1.124	3.709	1.498	4.636	1.873	**68 0**
15	0.926	0.379	1.851	0.757	2.777	1.136	3.702	1.515	4.628	1.893	45
30	0.924	0.383	1.848	0.765	2.772	1.148	3.696	1.531	4.619	1.913	30
45	0.922	0.387	1.844	0.773	2.767	1.160	3.689	1.547	4.611	1.934	15
23 0	0.921	0.391	1.841	0.781	2.762	1.172	3.682	1.563	4.603	1.954	**67 0**
15	0.919	0.395	1.838	0.789	2.756	1.184	3.675	1.579	4.594	1.974	45
30	0.917	0.399	1.834	0.797	2.751	1.196	3.668	1.595	4.585	1.994	30
45	0.915	0.403	1.831	0.805	2.746	1.208	3.661	1.611	4.577	2.014	15
24 0	0.914	0.407	1.827	0.813	2.741	1.220	3.654	1.627	4.568	2.034	**66 0**
15	0.912	0.411	1.824	0.821	2.735	1.232	3.647	1.643	4.559	2.054	45
30	0.910	0.415	1.820	0.829	2.730	1.244	3.640	1.659	4.550	2.073	30
45	0.908	0.419	1.816	0.837	2.724	1.256	3.633	1.675	4.541	2.093	15
25 0	0.906	0.423	1.813	0.845	2.719	1.268	3.625	1.690	4.532	2.113	**65 0**
15	0.904	0.427	1.809	0.853	2.713	1.280	3.618	1.706	4.522	2.133	45
30	0.903	0.431	1.805	0.861	2.708	1.292	3.610	1.722	4.513	2.153	30
45	0.901	0.434	1.801	0.869	2.702	1.303	3.603	1.738	4.503	2.172	15
26 0	0.899	0.438	1.798	0.877	2.696	1.315	3.595	1.753	4.494	2.192	**64 0**
15	0.897	0.442	1.794	0.885	2.691	1.327	3.587	1.769	4.484	2.211	45
30	0.895	0.446	1.790	0.892	2.685	1.339	3.580	1.785	4.475	2.231	30
45	0.893	0.450	1.786	0.900	2.679	1.350	3.572	1.800	4.465	2.250	15
27 0	0.891	0.454	1.782	0.908	2.673	1.362	3.564	1.816	4.455	2.270	**63 0**
15	0.889	0.458	1.778	0.916	2.667	1.374	3.556	1.831	4.445	2.289	45
30	0.887	0.462	1.774	0.923	2.661	1.385	3.548	1.847	4.435	2.309	30
45	0.885	0.466	1.770	0.931	2.655	1.397	3.540	1.862	4.425	2.328	15
28 0	0.883	0.469	1.766	0.939	2.649	1.408	3.532	1.878	4.415	2.347	**62 0**
15	0.881	0.473	1.762	0.947	2.643	1.420	3.524	1.893	4.404	2.367	45
30	0.879	0.477	1.758	0.954	2.636	1.431	3.515	1.909	4.394	2.386	30
45	0.877	0.481	1.753	0.962	2.630	1.443	3.507	1.924	4.384	2.405	15
29 0	0.875	0.485	1.749	0.970	2.624	1.454	3.498	1.939	4.373	2.424	**61 0**
15	0.872	0.489	1.745	0.977	2.617	1.466	3.490	1.954	4.362	2.443	45
30	0.870	0.492	1.741	0.985	2.611	1.477	3.481	1.970	4.352	2.462	30
45	0.868	0.496	1.736	0.992	2.605	1.489	3.473	1.985	4.341	2.481	15
30 0	0.866	0.500	1.732	1.000	2.598	1.500	3.464	2.000	4.330	2.500	**60 0**
° ′	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	° ′
Bearing.	Distance 1.		Distance 2.		Distance 3.		Distance 4.		Distance 5.		Bearing.

Bearing.	Distance 6.		Distance 7.		Distance 8.		Distance 9.		Distance 10.		Bearing.
° ′	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	° ′
15 15	5.789	1.578	6.754	1.841	7.718	2.104	8.683	2.367	9.648	2.630	**74** 45
30	5.782	1.603	6.745	1.871	7.709	2.138	8.673	2.405	9.636	2.672	30
45	5.775	1.629	6.737	1.900	7.700	2.172	8.662	2.443	9.625	2.714	15
16 0	5.768	1.654	6.729	1.929	7.690	2.205	8.651	2.481	9.613	2.756	**74** 0
15	5.760	1.679	6.720	1.959	7.680	2.239	8.640	2.518	9.601	2.798	45
30	5.753	1.704	6.712	1.988	7.671	2.272	8.629	2.556	9.588	2.840	30
45	5.745	1.729	6.703	2.017	7.661	2.306	8.618	2.594	9.576	2.882	15
17 0	5.738	1.754	6.694	2.047	7.650	2.339	8.607	2.631	9.563	2.924	**73** 0
15	5.730	1.779	6.685	2.076	7.640	2.372	8.595	2.669	9.550	2.965	45
30	5.722	1.804	6.676	2.105	7.630	2.406	8.583	2.706	9.537	3.007	30
45	5.714	1.829	6.667	2.134	7.619	2.439	8.572	2.744	9.524	3.049	15
18 0	5.706	1.854	6.657	2.163	7.608	2.472	8.560	2.781	9.511	3.090	**72** 0
15	5.698	1.879	6.648	2.192	7.598	2.505	8.547	2.818	9.497	3.132	45
30	5.690	1.904	6.638	2.221	7.587	2.538	8.535	2.856	9.483	3.173	30
45	5.682	1.929	6.629	2.250	7.575	2.572	8.522	2.893	9.469	3.214	15
19 0	5.673	1.953	6.619	2.279	7.564	2.605	8.510	2.930	9.455	3.256	**71** 0
15	5.665	1.978	6.609	2.308	7.553	2.638	8.497	2.967	9.441	3.297	45
30	5.656	2.003	6.598	2.337	7.541	2.670	8.484	3.004	9.426	3.338	30
45	5.647	2.028	6.588	2.365	7.529	2.703	8.471	3.041	9.412	3.379	15
20 0	5.638	2.052	6.578	2.394	7.518	2.736	8.457	3.078	9.397	3.420	**70** 0
15	5.629	2.077	6.567	2.423	7.506	2.769	8.444	3.115	9.382	3.461	45
30	5.620	2.101	6.557	2.451	7.493	2.802	8.430	3.152	9.367	3.502	30
45	5.611	2.126	6.546	2.480	7.481	2.834	8.416	3.189	9.351	3.543	15
21 0	5.601	2.150	6.535	2.509	7.469	2.867	8.402	3.225	9.336	3.584	**69** 0
15	5.592	2.175	6.524	2.537	7.456	2.900	8.388	3.262	9.320	3.624	45
30	5.582	2.199	6.513	2.566	7.443	2.932	8.374	3.299	9.304	3.665	30
45	5.573	2.223	6.502	2.594	7.430	2.964	8.359	3.335	9.288	3.706	15
22 0	5.563	2.248	6.490	2.622	7.417	2.997	8.345	3.371	9.272	3.746	**68** 0
15	5.553	2.272	6.479	2.651	7.404	3.029	8.330	3.408	9.255	3.787	45
30	5.543	2.296	6.467	2.679	7.391	3.061	8.315	3.444	9.239	3.827	30
45	5.533	2.320	6.455	2.707	7.378	3.094	8.300	3.480	9.222	3.867	15
23 0	5.523	2.344	6.444	2.735	7.364	3.126	8.285	3.517	9.205	3.907	**67** 0
15	5.513	2.368	6.432	2.763	7.350	3.158	8.269	3.553	9.188	3.947	45
30	5.502	2.392	6.419	2.791	7.336	3.190	8.254	3.589	9.171	3.988	30
45	5.492	2.416	6.407	2.819	7.322	3.222	8.238	3.625	9.153	4.028	15
24 0	5.481	2.440	6.395	2.847	7.308	3.254	8.222	3.661	9.136	4.067	**66** 0
15	5.471	2.464	6.382	2.875	7.294	3.286	8.206	3.696	9.118	4.107	45
30	5.460	2.488	6.370	2.903	7.280	3.318	8.190	3.732	9.100	4.147	30
45	5.449	2.512	6.357	2.931	7.265	3.349	8.173	3.768	9.081	4.187	15
25 0	5.438	2.536	6.344	2.958	7.250	3.381	8.157	3.804	9.063	4.226	**65** 0
15	5.427	2.559	6.331	2.986	7.236	3.413	8.140	3.839	9.045	4.266	45
30	5.416	2.583	6.318	3.014	7.221	3.444	8.123	3.875	9.026	4.305	30
45	5.404	2.607	6.305	3.041	7.206	3.476	8.106	3.910	9.007	4.345	15
26 0	5.393	2.630	6.292	3.069	7.190	3.507	8.089	3.945	8.988	4.384	**64** 0
15	5.3S1	2.654	6.278	3.096	7.175	3.538	8.072	3.981	8.969	4.423	45
30	5.370	2.677	6.265	3.123	7.160	3.570	8.054	4.016	8.949	4.462	30
45	5.358	2.701	6.251	3.151	7.144	3.601	8.037	4.051	8.930	4.501	15
27 0	5.346	2.724	6.237	3.178	7.128	3.632	8.019	4.086	8.910	4.540	**63** 0
15	5.334	2.747	6.223	3.205	7.112	3.663	8.001	4.121	8.890	4.579	45
30	5.322	2.770	6.209	3.232	7.096	3.694	7.983	4.156	8.870	4.618	30
45	5.310	2.794	6.195	3.259	7.080	3.725	7.965	4.190	8.850	4.656	15
28 0	5.298	2.817	6.181	3.286	7.064	3.756	7.947	4.225	8.829	4.695	**62** 0
15	5.285	2.840	6.166	3.313	7.047	3.787	7.928	4.260	8.809	4.733	45
30	5.273	2.863	6.152	3.340	7.031	3.817	7.909	4.294	8.788	4.772	30
45	5.260	2.886	6.137	3.367	7.014	3.848	7.891	4.329	8.767	4.810	15
29 0	5.248	2.909	6.122	3.394	6.997	3.878	7.872	4.363	8.746	4.848	**61** 0
15	5.235	2.932	6.107	3.420	6.980	3.909	7.852	4.398	8.725	4.886	45
30	5.222	2.955	6.093	3.447	6.963	3.939	7.833	4.432	8.704	4.924	30
45	5.209	2.977	6.077	3.474	6.946	3.970	7.814	4.466	8.682	4.962	15
30 0	5.196	3.000	6.062	3.500	6.928	4.000	7.794	4.500	8.660	5.000	**60** 0
° ′	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	° ′
Bearing.	Distance 6.		Distance 7.		Distance 8.		Distance 9.		Distance 10.		Bearing.

Bearing.	Distance 1.		Distance 2.		Distance 3.		Distance 4.		Distance 5.		Bearing.
° ′	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	° ′
30 15	0.864	0.504	1.728	1.008	2.592	1.511	3.455	2.015	4.319	2.519	**59** 45
30	0.862	0.508	1.723	1.015	2.585	1.523	3.447	2.030	4.308	2.538	30
45	0.859	0.511	1.719	1.023	2.578	1.534	3.438	2.045	4.297	2.556	15
31 0	0.857	0.515	1.714	1.030	2.572	1.545	3.429	2.060	4.286	2.575	**59** 0
15	0.855	0.519	1.710	1.038	2.565	1.556	3.420	2.075	4.275	2.594	45
30	0.853	0.522	1.705	1.045	2.558	1.567	3.411	2.090	4.263	2.612	30
45	0.850	0.526	1.701	1.052	2.551	1.579	3.401	2.105	4.252	2.631	15
32 0	0.848	0.530	1.696	1.060	2.544	1.590	3.392	2.120	4.240	2.650	**58** 0
15	0.846	0.534	1.691	1.067	2.537	1.601	3.383	2.134	4.229	2.668	45
30	0.843	0.537	1.687	1.075	2.530	1.612	3.374	2.149	4.217	2.686	30
45	0.841	0.541	1.682	1.082	2.523	1.623	3.364	2.164	4.205	2.705	15
33 0	0.839	0.545	1.677	1.089	2.516	1.634	3.355	2.179	4.193	2.723	**57** 0
15	0.836	0.548	1.673	1.097	2.509	1.645	3.345	2.193	4.181	2.741	45
30	0.834	0.552	1.668	1.104	2.502	1.656	3.336	2.208	4.169	2.760	30
45	0.831	0.556	1.663	1.111	2.494	1.667	3.326	2.222	4.157	2.778	15
34 0	0.829	0.559	1.658	1.118	2.487	1.678	3.316	2.237	4.145	2.796	**56** 0
15	0.827	0.563	1.653	1.126	2.480	1.688	3.306	2.251	4.133	2.814	45
30	0.824	0.566	1.648	1.133	2.472	1.699	3.297	2.266	4.121	2.832	30
45	0.822	0.570	1.643	1.140	2.465	1.710	3.287	2.280	4.108	2.850	15
35 0	0.819	0.574	1.638	1.147	2.457	1.721	3.277	2.294	4.096	2.868	**55** 0
15	0.817	0.577	1.633	1.154	2.450	1.731	3.267	2.309	4.083	2.886	45
30	0.814	0.581	1.628	1.161	2.442	1.742	3.257	2.323	4.071	2.904	30
45	0.812	0.584	1.623	1.168	2.435	1.753	3.246	2.337	4.058	2.921	15
36 0	0.809	0.588	1.618	1.176	2.427	1.763	3.236	2.351	4.045	2.939	**54** 0
15	0.806	0.591	1.613	1.183	2.419	1.774	3.226	2.365	4.032	2.957	45
30	0.804	0.595	1.608	1.190	2.412	1.784	3.215	2.379	4.019	2.974	30
45	0.801	0.598	1.603	1.197	2.404	1.795	3.205	2.393	4.006	2.992	15
37 0	0.799	0.602	1.597	1.204	2.396	1.805	3.195	2.407	3.993	3.009	**53** 0
15	0.796	0.605	1.592	1.211	2.388	1.816	3.184	2.421	3.980	3.026	45
30	0.793	0.609	1.587	1.218	2.380	1.826	3.173	2.435	3.967	3.044	30
45	0.791	0.612	1.581	1.224	2.372	1.837	3.163	2.449	3.953	3.061	15
38 0	0.788	0.616	1.576	1.231	2.364	1.847	3.152	2.463	3.940	3.078	**52** 0
15	0.785	0.619	1.571	1.238	2.356	1.857	3.141	2.476	3.927	3.095	45
30	0.783	0.623	1.565	1.245	2.348	1.868	3.130	2.490	3.913	3.113	30
45	0.780	0.626	1.560	1.252	2.340	1.878	3.120	2.504	3.899	3.130	15
39 0	0.777	0.629	1.554	1.259	2.331	1.888	3.109	2.517	3.886	3.147	**51** 0
15	0.774	0.633	1.549	1.265	2.323	1.898	3.098	2.531	3.872	3.164	45
30	0.772	0.636	1.543	1.272	2.315	1.908	3.086	2.544	3.858	3.180	30
45	0.769	0.639	1.538	1.279	2.307	1.918	3.075	2.558	3.844	3.197	15
40 0	0.766	0.643	1.532	1.286	2.298	1.928	3.064	2.571	3.830	3.214	**50** 0
15	0.763	0.646	1.526	1.292	2.290	1.938	3.053	2.584	3.816	3.231	45
30	0.760	0.649	1.521	1.299	2.281	1.948	3.042	2.598	3.802	3.247	30
45	0.758	0.653	1.515	1.306	2.273	1.958	3.030	2.611	3.788	3.264	15
41 0	0.755	0.656	1.509	1.312	2.264	1.968	3.019	2.624	3.774	3.280	**49** 0
15	0.752	0.659	1.504	1.319	2.256	1.978	3.007	2.637	3.759	3.297	45
30	0.749	0.663	1.498	1.325	2.247	1.988	2.996	2.650	3.745	3.313	30
45	0.746	0.666	1.492	1.332	2.238	1.998	2.984	2.664	3.730	3.329	15
42 0	0.743	0.669	1.486	1.338	2.229	2.007	2.973	2.677	3.716	3.346	**48** 0
15	0.740	0.672	1.480	1.345	2.221	2.017	2.961	2.689	3.701	3.362	45
30	0.737	0.676	1.475	1.351	2.212	2.027	2.949	2.702	3.686	3.378	30
45	0.734	0.679	1.469	1.358	2.203	2.036	2.937	2.715	3.672	3.394	15
43 0	0.731	0.682	1.463	1.364	2.194	2.046	2.925	2.728	3.657	3.410	**47** 0
15	0.728	0.685	1.457	1.370	2.185	2.056	2.913	2.741	3.642	3.426	45
30	0.725	0.688	1.451	1.377	2.176	2.065	2.901	2.753	3.627	3.442	30
45	0.722	0.692	1.445	1.383	2.167	2.075	2.889	2.766	3.612	3.458	15
44 0	0.719	0.695	1.439	1.389	2.158	2.084	2.877	2.779	3.597	3.473	**46** 0
15	0.716	0.698	1.433	1.396	2.149	2.093	2.865	2.791	3.582	3.489	45
30	0.713	0.701	1.427	1.402	2.140	2.103	2.853	2.804	3.566	3.505	30
45	0.710	0.704	1.420	1.408	2.131	2.112	2.841	2.816	3.551	3.520	15
45 0	0.707	0.707	1.414	1.414	2.121	2.121	2.828	2.828	3.536	3.536	**45** 0
° ′	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	° ′
Bearing.	Distance 1.		Distance 2.		Distance 3.		Distance 4.		Distance 5.		Bearing.

Bearing.	Distance 6.		Distance 7.		Distance 8.		Distance 9.		Distance 10.		Bearing.
° ′	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	° ′
30 15	5.183	3.023	6.047	3.526	6.911	4.030	7.775	4.534	8.638	5.038	**59** 45
30	5.170	3.045	6.031	3.553	6.893	4.060	7.755	4.568	8.616	5.075	30
45	5.156	3.068	6.016	3.579	6.875	4.090	7.735	4.602	8.594	5.113	15
31 0	5.143	3.090	6.000	3.605	6.857	4.120	7.715	4.635	8.572	5.150	**59** 0
15	5.129	3.113	5.984	3.631	6.839	4.150	7.694	4.669	8.549	5.188	45
30	5.116	3.135	5.968	3.657	6.821	4.180	7.674	4.702	8.526	5.225	30
45	5.102	3.157	5.952	3.683	6.803	4.210	7.653	4.736	8.504	5.262	15
32 0	5.088	3.180	5.936	3.709	6.784	4.239	7.632	4.769	8.481	5.299	**58** 0
15	5.074	3.202	5.920	3.735	6.766	4.269	7.612	4.802	8.457	5.336	45
30	5.060	3.224	5.904	3.761	6.747	4.298	7.591	4.836	8.434	5.373	30
45	5.046	3.246	5.887	3.787	6.728	4.328	7.569	4.869	8.410	5.410	15
33 0	5.032	3.268	5.871	3.812	6.709	4.357	7.548	4.902	8.387	5.446	**57** 0
15	5.018	3.290	5.854	3.838	6.690	4.386	7.527	4.935	8.363	5.483	45
30	5.003	3.312	5.837	3.864	6.671	4.416	7.505	4.967	8.339	5.519	30
45	4.989	3.333	5.820	3.889	6.652	4.445	7.483	5.000	8.315	5.556	15
34 0	4.974	3.355	5.803	3.914	6.632	4.474	7.461	5.033	8.290	5.592	**56** 0
15	4.960	3.377	5.786	3.940	6.613	4.502	7.439	5.065	8.266	5.628	45
30	4.945	3.398	5.769	3.965	6.593	4.531	7.417	5.098	8.241	5.664	30
45	4.930	3.420	5.752	3.990	6.573	4.560	7.395	5.130	8.217	5.700	15
35 0	4.915	3.441	5.734	4.015	6.553	4.589	7.372	5.162	8.192	5.736	**55** 0
15	4.900	3.463	5.716	4.040	6.533	4.617	7.350	5.194	8.166	5.772	45
30	4.885	3.484	5.699	4.065	6.513	4.646	7.327	5.226	8.141	5.807	30
45	4.869	3.505	5.681	4.090	6.493	4.674	7.304	5.258	8.116	5.843	15
36 0	4.854	3.527	5.663	4.115	6.472	4.702	7.281	5.290	8.090	5.878	**54** 0
15	4.839	3.548	5.645	4.139	6.452	4.730	7.258	5.322	8.064	5.913	45
30	4.823	3.569	5.627	4.164	6.431	4.759	7.235	5.353	8.039	5.948	30
45	4.808	3.590	5.609	4.188	6.410	4.787	7.211	5.385	8.013	5.983	15
37 0	4.792	3.611	5.590	4.213	6.389	4.815	7.188	5.416	7.986	6.018	**53** 0
15	4.776	3.632	5.572	4.237	6.368	4.842	7.164	5.448	7.960	6.053	45
30	4.760	3.653	5.554	4.261	6.347	4.870	7.140	5.479	7.934	6.088	30
45	4.744	3.673	5.535	4.286	6.326	4.898	7.116	5.510	7.907	6.122	15
38 0	4.728	3.694	5.516	4.310	6.304	4.925	7.092	5.541	7.880	6.157	**52** 0
15	4.712	3.715	5.497	4.334	6.283	4.953	7.068	5.572	7.853	6.191	45
30	4.696	3.735	5.478	4.358	6.261	4.980	7.043	5.603	7.826	6.225	30
45	4.679	3.756	5.459	4.381	6.239	5.007	7.019	5.633	7.799	6.259	15
39 0	4.663	3.776	5.440	4.405	6.217	5.035	6.994	5.664	7.772	6.293	**51** 0
15	4.646	3.796	5.421	4.429	6.195	5.062	6.970	5.694	7.744	6.327	45
30	4.630	3.816	5.401	4.453	6.173	5.089	6.945	5.725	7.716	6.361	30
45	4.613	3.837	5.382	4.476	6.151	5.116	6.920	5.755	7.688	6.394	15
40 0	4.596	3.857	5.362	4.500	6.128	5.142	6.894	5.785	7.660	6.428	**50** 0
15	4.579	3.877	5.343	4.523	6.106	5.169	6.869	5.815	7.632	6.461	45
30	4.562	3.897	5.323	4.546	6.083	5.196	6.844	5.845	7.604	6.495	30
45	4.545	3.917	5.303	4.569	6.061	5.222	6.818	5.875	7.576	6.528	15
41 0	4.528	3.936	5.283	4.592	6.038	5.248	6.792	5.905	7.547	6.561	**49** 0
15	4.511	3.956	5.263	4.615	6.015	5.275	6.767	5.934	7.518	6.594	45
30	4.494	3.976	5.243	4.638	5.992	5.301	6.741	5.964	7.490	6.626	30
45	4.476	3.995	5.222	4.661	5.968	5.327	6.715	5.993	7.461	6.659	15
42 0	4.459	4.015	5.202	4.684	5.945	5.353	6.688	6.022	7.431	6.691	**48** 0
15	4.441	4.034	5.182	4.707	5.922	5.379	6.662	6.051	7.402	6.724	45
30	4.424	4.054	5.161	4.729	5.898	5.405	6.635	6.080	7.373	6.756	30
45	4.406	4.073	5.140	4.752	5.875	5.430	6.609	6.109	7.343	6.788	15
43 0	4.388	4.092	5.119	4.774	5.851	5.456	6.582	6.138	7.314	6.820	**47** 0
15	4.370	4.111	5.099	4.796	5.827	5.481	6.555	6.167	7.284	6.852	45
30	4.352	4.130	5.078	4.818	5.803	5.507	6.528	6.195	7.254	6.884	30
45	4.334	4.149	5.057	4.841	5.779	5.532	6.501	6.224	7.224	6.915	15
44 0	4.316	4.168	5.035	4.863	5.755	5.557	6.474	6.252	7.193	6.947	**46** 0
15	4.298	4.187	5.014	4.885	5.730	5.582	6.447	6.280	7.163	6.978	45
30	4.280	4.206	4.993	4.906	5.706	5.607	6.419	6.308	7.133	7.009	30
45	4.261	4.224	4.971	4.928	5.681	5.632	6.392	6.336	7.102	7.040	15
45 0	4.243	4.243	4.950	4.950	5.657	5.657	6.364	6.364	7.071	7.071	**45** 0
° ′	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	Dep.	Lat.	° ′
Bearing.	Distance 6.		Distance 7.		Distance 8.		Distance 9.		Distance 10.		Bearing.

TABLE VIII.

Difference of Latitude and Departure for ¼ Point.

	N. ¼ E.			N. ¼ W.			S. ¼ E.			S. ¼ W.	
Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.0	61	60.9	3.0	121	120.9	5.9	181	180.8	8.9	241	240.7	11.8
2	2.0	0.1	62	61.9	3.0	122	121.9	6.0	182	181.8	8.9	242	241.7	11.9
3	3.0	0.1	63	62.9	3.1	123	122.9	6.0	183	182.8	9.0	243	242.7	11.9
4	4.0	0.2	64	63.9	3.1	124	123.9	6.1	184	183.8	9.0	244	243.7	12.0
5	5.0	0.2	65	64.9	3.2	125	124.8	6.1	185	184.8	9.1	245	244.7	12.0
6	6.0	0.3	66	65.9	3.2	126	125.8	6.2	186	185.8	9.1	246	245.7	12.1
7	7.0	0.3	67	66.9	3.3	127	126.8	6.2	187	186.8	9.2	247	246.7	12.1
8	8.0	0.4	68	67.9	3.3	128	127.8	6.3	188	187.8	9.2	248	247.7	12.2
9	9.0	0.4	69	68.9	3.4	129	128.8	6.3	189	188.8	9.3	249	248.7	12.2
10	10.0	0.5	70	69.9	3.4	130	129.8	6.4	190	189.8	9.3	250	249.7	12.3
11	11.0	0.5	71	70.9	3.5	131	130.8	6.4	191	190.8	9.4	251	250.7	12.3
12	12.0	0.6	72	71.9	3.5	132	131.8	6.5	192	191.8	9.4	252	251.7	12.4
13	13.0	0.6	73	72.9	3.6	133	132.8	6.5	193	192.8	9.5	253	252.7	12.4
14	14.0	0.7	74	73.9	3.6	134	133.8	6.6	194	193.8	9.5	254	253.7	12.5
15	15.0	0.7	75	74.9	3.7	135	134.8	6.6	195	194.8	9.6	255	254.7	12.5
16	16.0	0.8	76	75.9	3.7	136	135.8	6.7	196	195.8	9.6	256	255.7	12.6
17	17.0	0.8	77	76.9	3.8	137	136.8	6.7	197	196.8	9.7	257	256.7	12.6
18	18.0	0.9	78	77.9	3.8	138	137.8	6.8	198	197.8	9.7	258	257.7	12.7
19	19.0	0.9	79	78.9	3.9	139	138.8	6.8	199	198.8	9.8	259	258.7	12.7
20	20.0	1.0	80	79.9	3.9	140	139.8	6.9	200	199.8	9.8	260	259.7	12.8
21	21.0	1.0	81	80.9	4.0	141	140.8	6.9	201	200.8	9.9	261	260.7	12.8
22	22.0	1.1	82	81.9	4.0	142	141.8	7.0	202	201.8	9.9	262	261.7	12.9
23	23.0	1.1	83	82.9	4.1	143	142.8	7.0	203	202.8	10.0	263	262.7	12.9
24	24.0	1.2	84	83.9	4.1	144	143.8	7.1	204	203.8	10.0	264	263.7	13.0
25	25.0	1.2	85	84.9	4.2	145	144.8	7.1	205	204.8	10.1	265	264.7	13.0
26	26.0	1.3	86	85.9	4.2	146	145.8	7.2	206	205.8	10.1	266	265.7	13.1
27	27.0	1.3	87	86.9	4.3	147	146.8	7.2	207	206.8	10.2	267	266.7	13.1
28	28.0	1.4	88	87.9	4.3	148	147.8	7.3	208	207.7	10.2	268	267.7	13.2
29	29.0	1.4	89	88.9	4.4	149	148.8	7.3	209	208.7	10.3	269	268.7	13.2
30	30.0	1.5	90	89.9	4.4	150	149.8	7.4	210	209.7	10.3	270	269.7	13.2
31	31.0	1.5	91	90.9	4.5	151	150.8	7.4	211	210.7	10.4	271	270.7	13.3
32	32.0	1.6	92	91.9	4.5	152	151.8	7.5	212	211.7	10.4	272	271.7	13.3
33	33.0	1.6	93	92.9	4.6	153	152.8	7.5	213	212.7	10.5	273	272.7	13.4
34	34.0	1.7	94	93.9	4.6	154	153.8	7.6	214	213.7	10.5	274	273.7	13.4
35	35.0	1.7	95	94.9	4.7	155	154.8	7.6	215	214.7	10.5	275	274.7	13.5
36	36.0	1.8	96	95.9	4.7	156	155.8	7.7	216	215.7	10.6	276	275.7	13.5
37	37.0	1.8	97	96.9	4.8	157	156.8	7.7	217	216.7	10.6	277	276.7	13.6
38	38.0	1.9	98	97.9	4.8	158	157.8	7.8	218	217.7	10.7	278	277.7	13.6
39	39.0	1.9	99	98.9	4.9	159	158.8	7.8	219	218.7	10.7	279	278.7	13.7
40	40.0	2.0	100	99.9	4.9	160	159.8	7.9	220	219.7	10.8	280	279.7	13.7
41	41.0	2.0	101	100.9	5.0	161	160.8	7.9	221	220.7	10.8	281	280.7	13.8
42	41.9	2.1	102	101.9	5.0	162	161.8	7.9	222	221.7	10.9	282	281.7	13.8
43	42.9	2.1	103	102.9	5.1	163	162.8	8.0	223	222.7	10.9	283	282.7	13.9
44	43.9	2.2	104	103.9	5.1	164	163.8	8.0	224	223.7	11.0	284	283.7	13.9
45	44.9	2.2	105	104.9	5.2	165	164.8	8.1	225	224.7	11.0	285	284.7	14.0
46	45.9	2.3	106	105.9	5.2	166	165.8	8.1	226	225.7	11.1	286	285.7	14.0
47	46.9	2.3	107	106.9	5.3	167	166.8	8.2	227	226.7	11.1	287	286.7	14.1
48	47.9	2.4	108	107.9	5.3	168	167.8	8.2	228	227.7	11.2	288	287.7	14.1
49	48.9	2.4	109	108.9	5.3	169	168.8	8.3	229	228.7	11.2	289	288.7	14.2
50	49.9	2.5	110	109.9	5.4	170	169.8	8.3	230	229.7	11.3	290	289.7	14.2
51	50.9	2.5	111	110.9	5.4	171	170.8	8.4	231	230.7	11.3	291	290.6	14.3
52	51.9	2.6	112	111.9	5.5	172	171.8	8.4	232	231.7	11.4	292	291.6	14.3
53	52.9	2.6	113	112.9	5.5	173	172.8	8.5	233	232.7	11.4	293	292.6	14.4
54	53.9	2.6	114	113.9	5.6	174	173.8	8.5	234	233.7	11.5	294	293.6	14.4
55	54.9	2.7	115	114.9	5.6	175	174.8	8.6	235	234.7	11.5	295	294.6	14.5
56	55.9	2.7	116	115.9	5.7	176	175.8	8.6	236	235.7	11.6	296	295.6	14.5
57	56.9	2.8	117	116.9	5.7	177	176.8	8.7	237	236.7	11.6	297	296.6	14.6
58	57.9	2.8	118	117.9	5.8	178	177.8	8.7	238	237.7	11.7	298	297.6	14.6
59	58.9	2.9	119	118.9	5.8	179	178.8	8.8	239	238.7	11.7	299	298.6	14.7
60	59.9	2.9	120	119.9	5.9	180	179.8	8.8	240	239.7	11.8	300	299.6	14.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

E. ¼ N.   E. ¼ S.   W. ¼ N.   W. ¼ S.   [For 7¾ Points.

TABLE VIII.   63

Difference of Latitude and Departure for ½ Point.

N. ½ E.			N. ½ W.			S. ½ E.			S. ½ W.		
Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.1	61	60.7	6.0	121	120.4	11.9	181	180.1	17.7	241	239.8	23.6
2	2.0	0.2	62	61.7	6.1	122	121.4	12.0	182	181.1	17.8	242	240.8	23.7
3	3.0	0.3	63	62.7	6.2	123	122.4	12.1	183	182.1	17.9	243	241.8	23.8
4	4.0	0.4	64	63.7	6.3	124	123.4	12.2	184	183.1	18.0	244	242.8	23.9
5	5.0	0.5	65	64.7	6.4	125	124.4	12.3	185	184.1	18.1	245	243.8	24.0
6	6.0	0.6	66	65.7	6.5	126	125.4	12.4	186	185.1	18.2	246	244.8	24.1
7	7.0	0.7	67	66.7	6.6	127	126.4	12.4	187	186.1	18.3	247	245.8	24.2
8	8.0	0.8	68	67.7	6.7	128	127.4	12.5	188	187.1	18.4	248	246.8	24.3
9	9.0	0.9	69	68.7	6.8	129	128.4	12.6	189	188.1	18.5	249	247.8	24.4
10	10.0	1.0	70	69.7	6.9	130	129.4	12.7	190	189.1	18.6	250	248.8	24.5
11	10.9	1.1	71	70.7	7.0	131	130.4	12.8	191	190.1	18.7	251	249.8	24.6
12	11.9	1.2	72	71.7	7.1	132	131.4	12.9	192	191.1	18.8	252	250.8	24.7
13	12.9	1.3	73	72.6	7.2	133	132.4	13.0	193	192.1	18.9	253	251.8	24.8
14	13.9	1.4	74	73.6	7.3	134	133.4	13.1	194	193.1	19.0	254	252.8	24.9
15	14.9	1.5	75	74.6	7.4	135	134.3	13.2	195	194.1	19.1	255	253.8	25.0
16	15.9	1.6	76	75.6	7.4	136	135.3	13.3	196	195.1	19.2	256	254.8	25.1
17	16.9	1.7	77	76.6	7.5	137	136.3	13.4	197	196.1	19.3	257	255.8	25.2
18	17.9	1.8	78	77.6	7.6	138	137.3	13.5	198	197.0	19.4	258	256.8	25.3
19	18.9	1.9	79	78.6	7.7	139	138.3	13.6	199	198.0	19.5	259	257.8	25.4
20	19.9	2.0	80	79.6	7.8	140	139.3	13.7	200	199.0	19.6	260	258.7	25.5
21	20.9	2.1	81	80.6	7.9	141	140.3	13.8	201	200.0	19.7	261	259.7	25.6
22	21.9	2.2	82	81.6	8.0	142	141.3	13.9	202	201.0	19.8	262	260.7	25.7
23	22.9	2.3	83	82.6	8.1	143	142.3	14.0	203	202.0	19.9	263	261.7	25.8
24	23.9	2.4	84	83.6	8.2	144	143.3	14.1	204	203.0	20.0	264	262.7	25.9
25	24.9	2.5	85	84.6	8.3	145	144.3	14.2	205	204.0	20.1	265	263.7	26.0
26	25.9	2.5	86	85.6	8.4	146	145.3	14.3	206	205.0	20.2	266	264.7	26.1
27	26.9	2.6	87	86.6	8.5	147	146.3	14.4	207	206.0	20.3	267	265.7	26.2
28	27.9	2.7	88	87.6	8.6	148	147.3	14.5	208	207.0	20.4	268	266.7	26.3
29	28.9	2.8	89	88.6	8.7	149	148.3	14.6	209	208.0	20.5	269	267.7	26.4
30	29.9	2.9	90	89.6	8.8	150	149.3	14.7	210	209.0	20.6	270	268.7	26.5
31	30.9	3.0	91	90.6	8.9	151	150.3	14.8	211	210.0	20.7	271	269.7	26.6
32	31.8	3.1	92	91.6	9.0	152	151.3	14.9	212	211.0	20.8	272	270.7	26.7
33	32.8	3.2	93	92.6	9.1	153	152.3	15.0	213	212.0	20.9	273	271.7	26.8
34	33.8	3.3	94	93.5	9.2	154	153.3	15.1	214	213.0	21.0	274	272.7	26.9
35	34.8	3.4	95	94.5	9.3	155	154.3	15.2	215	214.0	21.1	275	273.7	27.0
36	35.8	3.5	96	95.5	9.4	156	155.2	15.3	216	215.0	21.2	276	274.7	27.1
37	36.8	3.6	97	96.5	9.5	157	156.2	15.4	217	216.0	21.3	277	275.7	27.2
38	37.8	3.7	98	97.5	9.6	158	157.2	15.5	218	217.0	21.4	278	276.7	27.2
39	38.8	3.8	99	98.5	9.7	159	158.2	15.6	219	217.9	21.5	279	277.7	27.3
40	39.8	3.9	100	99.5	9.8	160	159.2	15.7	220	218.9	21.6	280	278.7	27.4
41	40.8	4.0	101	100.5	9.9	161	160.2	15.8	221	219.9	21.7	281	279.6	27.5
42	41.8	4.1	102	101.5	10.0	162	161.2	15.9	222	220.9	21.8	282	280.6	27.6
43	42.8	4.2	103	102.5	10.1	163	162.2	16.0	223	221.9	21.9	283	281.6	27.7
44	43.8	4.3	104	103.5	10.2	164	163.2	16.1	224	222.9	22.0	284	282.6	27.8
45	44.8	4.4	105	104.5	10.3	165	164.2	16.2	225	223.9	22.1	285	283.6	27.9
46	45.8	4.5	106	105.5	10.4	166	165.2	16.3	226	224.9	22.2	286	284.6	28.0
47	46.8	4.6	107	106.5	10.5	167	166.2	16.4	227	225.9	22.2	287	285.6	28.1
48	47.8	4.7	108	107.5	10.6	168	167.2	16.5	228	226.9	22.3	288	286.6	28.2
49	48.8	4.8	109	108.5	10.7	169	168.2	16.6	229	227.9	22.4	289	287.6	28.3
50	49.8	4.9	110	109.5	10.8	170	169.2	16.7	230	228.9	22.5	290	288.6	28.4
51	50.8	5.0	111	110.5	10.9	171	170.2	16.8	231	229.9	22.6	291	289.6	28.5
52	51.7	5.1	112	111.5	11.0	172	171.2	16.9	232	230.9	22.7	292	290.6	28.6
53	52.7	5.2	113	112.5	11.1	173	172.2	17.0	233	231.9	22.8	293	291.6	28.7
54	53.7	5.3	114	113.5	11.2	174	173.2	17.1	234	232.9	22.9	294	292.6	28.8
55	54.7	5.4	115	114.4	11.3	175	174.2	17.2	235	233.9	23.0	295	293.6	28.9
56	55.7	5.5	116	115.4	11.4	176	175.2	17.3	236	234.9	23.1	296	294.6	29.0
57	56.7	5.6	117	116.4	11.5	177	176.1	17.3	237	235.9	23.2	297	295.6	29.1
58	57.7	5.7	118	117.4	11.6	178	177.1	17.4	238	236.9	23.3	298	296.6	29.2
59	58.7	5.8	119	118.4	11.7	179	178.1	17.5	239	237.8	23.4	299	297.6	29.3
60	59.7	5.9	120	119.4	11.8	180	179.1	17.6	240	238.8	23.5	300	298.6	29.4
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

E. ½ N.   E. ½ S.   W. ½ N.   W. ½ S.   [For 7½ Points.

TABLE VIII.

Difference of Latitude and Departure for ¾ Point.

	N. ¾ E.			N. ¾ W.			S. ¾ E.			S. ¾ W.	
Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.1	61	60.3	9.0	121	119.7	17.8	181	179.0	26.6	241	238.4	35.4
2	2.0	0.3	62	61.3	9.1	122	120.7	17.9	182	180.0	26.7	242	239.4	35.5
3	3.0	0.4	63	62.3	9.2	123	121.7	18.0	183	181.0	26.9	243	240.4	35.7
4	4.0	0.6	64	63.3	9.4	124	122.7	18.2	184	182.0	27.0	244	241.4	35.8
5	4.9	0.7	65	64.3	9.5	125	123.6	18.3	185	183.0	27.1	245	242.3	35.9
6	5.9	0.9	66	65.3	9.7	126	124.6	18.5	186	184.0	27.3	246	243.3	36.1
7	6.9	1.0	67	66.3	9.8	127	125.6	18.6	187	185.0	27.4	247	244.3	36.2
8	7.9	1.2	68	67.3	10.0	128	126.6	18.8	188	186.0	27.6	248	245.3	36.4
9	8.9	1.3	69	68.3	10.1	129	127.6	18.9	189	187.0	27.7	249	246.3	36.5
10	9.9	1.5	70	69.2	10.3	130	128.6	19.1	190	187.9	27.9	250	247.3	36.7
11	10.9	1.6	71	70.2	10.4	131	129.6	19.2	191	188.9	28.0	251	248.3	36.8
12	11.9	1.8	72	71.2	10.6	132	130.6	19.4	192	189.9	28.2	252	249.3	37.0
13	12.9	1.9	73	72.2	10.7	133	131.6	19.5	193	190.9	28.3	253	250.3	37.1
14	13.8	2.1	74	73.2	10.9	134	132.5	19.7	194	191.9	28.5	254	251.3	37.3
15	14.8	2.2	75	74.2	11.0	135	133.5	19.8	195	192.9	28.6	255	252.2	37.4
16	15.8	2.3	76	75.2	11.2	136	134.5	20.0	196	193.9	28.8	256	253.2	37.6
17	16.8	2.5	77	76.2	11.3	137	135.5	20.1	197	194.9	28.9	257	254.2	37.7
18	17.8	2.6	78	77.2	11.4	138	136.5	20.2	198	195.9	29.1	258	255.2	37.9
19	18.8	2.8	79	78.1	11.6	139	137.5	20.4	199	196.8	29.2	259	256.2	38.0
20	19.8	2.9	80	79.1	11.7	140	138.5	20.5	200	197.8	29.3	260	257.2	38.1
21	20.8	3.1	81	80.1	11.9	141	139.5	20.7	201	198.8	29.5	261	258.2	38.3
22	21.8	3.2	82	81.1	12.0	142	140.5	20.8	202	199.8	29.6	262	259.2	38.4
23	22.8	3.4	83	82.1	12.2	143	141.5	21.0	203	200.8	29.8	263	260.2	38.6
24	23.7	3.5	84	83.1	12.3	144	142.4	21.1	204	201.8	29.9	264	261.1	38.7
25	24.7	3.7	85	84.1	12.5	145	143.4	21.3	205	202.8	30.1	265	262.1	38.9
26	25.7	3.8	86	85.1	12.6	146	144.4	21.4	206	203.8	30.2	266	263.1	39.0
27	26.7	4.0	87	86.1	12.8	147	145.4	21.6	207	204.8	30.4	267	264.1	39.2
28	27.7	4.1	88	87.0	12.9	148	146.4	21.7	208	205.7	30.5	268	265.1	39.3
29	28.7	4.3	89	88.0	13.1	149	147.4	21.9	209	206.7	30.7	269	266.1	39.5
30	29.7	4.4	90	89.0	13.2	150	148.4	22.0	210	207.7	30.8	270	267.1	39.6
31	30.7	4.5	91	90.0	13.4	151	149.4	22.2	211	208.7	31.0	271	268.1	39.8
32	31.7	4.7	92	91.0	13.5	152	150.4	22.3	212	209.7	31.1	272	269.1	39.9
33	32.6	4.8	93	92.0	13.6	153	151.3	22.4	213	210.7	31.3	273	270.0	40.1
34	33.6	5.0	94	93.0	13.8	154	152.3	22.6	214	211.7	31.4	274	271.0	40.2
35	34.6	5.1	95	94.0	13.9	155	153.3	22.7	215	212.7	31.5	275	272.0	40.4
36	35.6	5.3	96	95.0	14.1	156	154.3	22.9	216	213.7	31.7	276	273.0	40.5
37	36.6	5.4	97	96.0	14.2	157	155.3	23.0	217	214.7	31.8	277	274.0	40.6
38	37.6	5.6	98	96.9	14.4	158	156.3	23.2	218	215.6	32.0	278	275.0	40.8
39	38.6	5.7	99	97.9	14.5	159	157.3	23.3	219	216.6	32.1	279	276.0	40.9
40	39.6	5.9	100	98.9	14.7	160	158.3	23.5	220	217.6	32.3	280	277.0	41.1
41	40.6	6.0	101	99.9	14.8	161	159.3	23.6	221	218.6	32.4	281	278.0	41.2
42	41.5	6.2	102	100.9	15.0	162	160.2	23.8	222	219.6	32.6	282	278.9	41.4
43	42.5	6.3	103	101.9	15.1	163	161.2	23.9	223	220.6	32.7	283	279.9	41.5
44	43.5	6.5	104	102.9	15.3	164	162.2	24.1	224	221.6	32.9	284	280.9	41.7
45	44.5	6.6	105	103.9	15.4	165	163.2	24.2	225	222.6	33.0	285	281.9	41.8
46	45.5	6.7	106	104.9	15.6	166	164.2	24.4	226	223.6	33.2	286	282.9	42.0
47	46.5	6.9	107	105.8	15.7	167	165.2	24.5	227	224.5	33.3	287	283.9	42.1
48	47.5	7.0	108	106.8	15.8	168	166.2	24.7	228	225.5	33.5	288	284.9	42.3
49	48.5	7.2	109	107.8	16.0	169	167.2	24.8	229	226.5	33.6	289	285.9	42.4
50	49.5	7.3	110	108.8	16.1	170	168.2	24.9	230	227.5	33.7	290	286.9	42.6
51	50.4	7.5	111	109.8	16.3	171	169.1	25.1	231	228.5	33.9	291	287.9	42.7
52	51.4	7.6	112	110.8	16.4	172	170.1	25.2	232	229.5	34.0	292	288.8	42.8
53	52.4	7.8	113	111.8	16.6	173	171.1	25.4	233	230.5	34.2	293	289.8	43.0
54	53.4	7.9	114	112.8	16.7	174	172.1	25.5	234	231.5	34.3	294	290.8	43.1
55	54.4	8.1	115	113.8	16.9	175	173.1	25.7	235	232.5	34.5	295	291.8	43.3
56	55.4	8.2	116	114.7	17.0	176	174.1	25.8	236	233.4	34.6	296	292.8	43.4
57	56.4	8.4	117	115.7	17.2	177	175.1	26.0	237	234.4	34.8	297	293.8	43.6
58	57.4	8.5	118	116.7	17.3	178	176.1	26.1	238	235.4	34.9	298	294.8	43.7
59	58.4	8.7	119	117.7	17.5	179	177.1	26.3	239	236.4	35.1	299	295.8	43.9
60	59.4	8.8	120	118.7	17.6	180	178.1	26.4	240	237.4	35.2	300	296.8	44.0
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

| E. ¾ N. | E. ¾ S. | W. ¾ N. | W. ¾ S. | [For 7¾ Points. |

TABLE VIII.

65

Difference of Latitude and Departure for 1 Point.

	N. by E.			N. by W.			S. by E.			S. by W.	
Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.2	61	59.8	11.9	121	118.7	23.6	181	177.5	35.3	241	236.4	47.0
2	2.0	0.4	62	60.8	12.1	122	119.7	23.8	182	178.5	35.5	242	237.4	47.2
3	2.9	0.6	63	61.8	12.3	123	120.6	24.0	183	179.5	35.7	243	238.3	47.4
4	3.9	0.8	64	62.8	12.5	124	121.6	24.2	184	180.5	35.9	244	239.3	47.6
5	4.9	1.0	65	63.8	12.7	125	122.6	24.4	185	181.4	36.1	245	240.3	47.8
6	5.9	1.2	66	64.7	12.9	126	123.6	24.6	186	182.4	36.3	246	241.3	48.0
7	6.9	1.4	67	65.7	13.1	127	124.6	24.8	187	183.4	36.5	247	242.3	48.2
8	7.8	1.6	68	66.7	13.3	128	125.5	25.0	188	184.4	36.7	248	243.2	48.4
9	8.8	1.8	69	67.7	13.5	129	126.5	25.2	189	185.4	36.9	249	244.2	48.6
10	9.8	2.0	70	68.7	13.7	130	127.5	25.4	190	186.3	37.1	250	245.2	48.8
11	10.8	2.1	71	69.6	13.9	131	128.5	25.6	191	187.3	37.3	251	246.2	49.0
12	11.8	2.3	72	70.6	14.0	132	129.5	25.8	192	188.3	37.5	252	247.2	49.2
13	12.8	2.5	73	71.6	14.2	133	130.4	25.9	193	189.3	37.7	253	248.1	49.4
14	13.7	2.7	74	72.6	14.4	134	131.4	26.1	194	190.3	37.8	254	249.1	49.6
15	14.7	2.9	75	73.6	14.6	135	132.4	26.3	195	191.3	38.0	255	250.1	49.7
16	15.7	3.1	76	74.5	14.8	136	133.4	26.5	196	192.2	38.2	256	251.1	49.9
17	16.7	3.3	77	75.5	15.0	137	134.4	26.7	197	193.2	38.4	257	252.1	50.1
18	17.7	3.5	78	76.5	15.2	138	135.3	26.9	198	194.2	38.6	258	253.0	50.3
19	18.6	3.7	79	77.5	15.4	139	136.3	27.1	199	195.2	38.8	259	254.0	50.5
20	19.6	3.9	80	78.5	15.6	140	137.3	27.3	200	196.2	39.0	260	255.0	50.7
21	20.6	4.1	81	79.4	15.8	141	138.3	27.5	201	197.1	39.2	261	256.0	50.9
22	21.6	4.3	82	80.4	16.0	142	139.3	27.7	202	198.1	39.4	262	257.0	51.1
23	22.6	4.5	83	81.4	16.2	143	140.3	27.9	203	199.1	39.6	263	257.9	51.3
24	23.5	4.7	84	82.4	16.4	144	141.2	28.1	204	200.1	39.8	264	258.9	51.5
25	24.5	4.9	85	83.4	16.6	145	142.2	28.3	205	201.1	40.0	265	259.9	51.7
26	25.5	5.1	86	84.3	16.8	146	143.2	28.5	206	202.0	40.2	266	260.9	51.9
27	26.5	5.3	87	85.3	17.0	147	144.2	28.7	207	203.0	40.4	267	261.9	52.1
28	27.5	5.5	88	86.3	17.2	148	145.2	28.9	208	204.0	40.6	268	262.9	52.3
29	28.4	5.7	89	87.3	17.4	149	146.1	29.1	209	205.0	40.8	269	263.8	52.5
30	29.4	5.9	90	88.3	17.6	150	147.1	29.3	210	206.0	41.0	270	264.8	52.7
31	30.4	6.0	91	89.3	17.8	151	148.1	29.5	211	206.9	41.2	271	265.8	52.9
32	31.4	6.2	92	90.2	17.9	152	149.1	29.7	212	207.9	41.4	272	266.8	53.1
33	32.4	6.4	93	91.2	18.1	153	150.1	29.8	213	208.9	41.6	273	267.8	53.3
34	33.3	6.6	94	92.2	18.3	154	151.0	30.0	214	209.9	41.7	274	268.7	53.5
35	34.3	6.8	95	93.2	18.5	155	152.0	30.2	215	210.9	41.9	275	269.7	53.6
36	35.3	7.0	96	94.2	18.7	156	153.0	30.4	216	211.8	42.1	276	270.7	53.8
37	36.3	7.2	97	95.1	18.9	157	154.0	30.6	217	212.8	42.3	277	271.7	54.0
38	37.3	7.4	98	96.1	19.1	158	155.0	30.8	218	213.8	42.5	278	272.7	54.2
39	38.3	7.6	99	97.1	19.3	159	155.9	31.0	219	214.8	42.7	279	273.6	54.4
40	39.2	7.8	100	98.1	19.5	160	156.9	31.2	220	215.8	42.9	280	274.6	54.6
41	40.2	8.0	101	99.1	19.7	161	157.9	31.4	221	216.8	43.1	281	275.6	54.8
42	41.2	8.2	102	100.0	19.9	162	158.9	31.6	222	217.7	43.3	282	276.6	55.0
43	42.2	8.4	103	101.0	20.1	163	159.9	31.8	223	218.7	43.5	283	277.6	55.2
44	43.2	8.6	104	102.0	20.3	164	160.8	32.0	224	219.7	43.7	284	278.5	55.4
45	44.1	8.8	105	103.0	20.5	165	161.8	32.2	225	220.7	43.9	285	279.5	55.6
46	45.1	9.0	106	104.0	20.7	166	162.8	32.4	226	221.7	44.1	286	280.5	55.8
47	46.1	9.2	107	104.9	20.9	167	163.8	32.6	227	222.6	44.3	287	281.5	56.0
48	47.1	9.4	108	105.9	21.1	168	164.8	32.8	228	223.6	44.5	288	282.5	56.2
49	48.1	9.6	109	106.9	21.3	169	165.8	33.0	229	224.6	44.7	289	283.4	56.4
50	49.0	9.8	110	107.9	21.5	170	166.7	33.2	230	225.6	44.9	290	284.4	56.6
51	50.0	9.9	111	108.9	21.7	171	167.7	33.4	231	226.6	45.1	291	285.4	56.8
52	51.0	10.1	112	109.8	21.9	172	168.7	33.6	232	227.5	45.3	292	286.4	57.0
53	52.0	10.3	113	110.8	22.0	173	169.7	33.8	233	228.5	45.5	293	287.4	57.2
54	53.0	10.5	114	111.8	22.2	174	170.7	33.9	234	229.5	45.7	294	288.4	57.4
55	53.9	10.7	115	112.8	22.4	175	171.6	34.1	235	230.5	45.8	295	289.3	57.6
56	54.9	10.9	116	113.8	22.6	176	172.6	34.3	236	231.5	46.0	296	290.3	57.7
57	55.9	11.1	117	114.8	22.8	177	173.6	34.5	237	232.4	46.2	297	291.3	57.9
58	56.9	11.3	118	115.7	23.0	178	174.6	34.7	238	233.4	46.4	298	292.3	58.1
59	57.9	11.5	119	116.7	23.2	179	175.6	34.9	239	234.4	46.6	299	293.3	58.3
60	58.8	11.7	120	117.7	23.4	180	176.5	35.1	240	235.4	46.8	300	294.2	58.5
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE VIII.

Difference of Latitude and Departure for 1¼ Points.

N. by E. ¼ E.   N. by W. ¼ W.   S. by E. ¼ E.   S. by W. ¼ W.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.2	61	59.2	14.8	121	117.4	29.4	181	175.6	44.0	241	233.8	58.6
2	1.9	0.5	62	60.1	15.1	122	118.3	29.6	182	176.5	44.2	242	234.7	58.8
3	2.9	0.7	63	61.1	15.3	123	119.3	29.9	183	177.5	44.5	243	235.7	59.0
4	3.9	1.0	64	62.1	15.6	124	120.3	30.1	184	178.5	44.7	244	236.7	59.3
5	4.9	1.2	65	63.1	15.8	125	121.3	30.4	185	179.5	45.0	245	237.7	59.5
6	5.8	1.5	66	64.0	16.0	126	122.2	30.6	186	180.4	45.2	246	238.6	59.8
7	6.8	1.7	67	65.0	16.3	127	123.2	30.9	187	181.4	45.4	247	239.6	60.0
8	7.8	1.9	68	66.0	16.5	128	124.2	31.1	188	182.4	45.7	248	240.6	60.3
9	8.7	2.2	69	66.9	16.8	129	125.1	31.3	189	183.3	45.9	249	241.5	60.5
10	9.7	2.4	70	67.9	17.0	130	126.1	31.6	190	184.3	46.2	250	242.5	60.7
11	10.7	2.7	71	68.9	17.3	131	127.1	31.8	191	185.3	46.4	251	243.5	61.0
12	11.6	2.9	72	69.8	17.5	132	128.0	32.1	192	186.2	46.7	252	244.4	61.2
13	12.6	3.2	73	70.8	17.7	133	129.0	32.3	193	187.2	46.9	253	245.4	61.5
14	13.6	3.4	74	71.8	18.0	134	130.0	32.6	194	188.2	47.1	254	246.4	61.7
15	14.6	3.6	75	72.8	18.2	135	131.0	32.8	195	189.2	47.4	255	247.4	62.0
16	15.5	3.9	76	73.7	18.5	136	131.9	33.0	196	190.1	47.6	256	248.3	62.2
17	16.5	4.1	77	74.7	18.7	137	132.9	33.3	197	191.1	47.9	257	249.3	62.4
18	17.5	4.4	78	75.7	19.0	138	133.9	33.5	198	192.1	48.1	258	250.3	62.7
19	18.4	4.6	79	76.6	19.2	139	134.8	33.8	199	193.0	48.4	259	251.2	62.9
20	19.4	4.9	80	77.6	19.4	140	135.8	34.0	200	194.0	48.6	260	252.2	63.2
21	20.4	5.1	81	78.6	19.7	141	136.8	34.3	201	195.0	48.8	261	253.2	63.4
22	21.3	5.3	82	79.5	19.9	142	137.7	34.5	202	195.9	49.1	262	254.1	63.7
23	22.3	5.6	83	80.5	20.2	143	138.7	34.7	203	196.9	49.3	263	255.1	63.9
24	23.3	5.8	84	81.5	20.4	144	139.7	35.0	204	197.9	49.6	264	256.1	64.1
25	24.3	6.1	85	82.5	20.7	145	140.7	35.2	205	198.9	49.8	265	257.1	64.4
26	25.2	6.3	86	83.4	20.9	146	141.6	35.5	206	199.8	50.1	266	258.0	64.6
27	26.2	6.6	87	84.4	21.1	147	142.6	35.7	207	200.8	50.3	267	259.0	64.9
28	27.2	6.8	88	85.4	21.4	148	143.6	36.0	208	201.8	50.5	268	260.0	65.1
29	28.1	7.0	89	86.3	21.6	149	144.5	36.2	209	202.7	50.8	269	260.9	65.4
30	29.1	7.3	90	87.3	21.9	150	145.5	36.4	210	203.7	51.0	270	261.9	65.6
31	30.1	7.5	91	88.3	22.1	151	146.5	36.7	211	204.7	51.3	271	262.9	65.8
32	31.0	7.8	92	89.2	22.4	152	147.4	36.9	212	205.6	51.5	272	263.8	66.1
33	32.0	8.0	93	90.2	22.6	153	148.4	37.2	213	206.6	51.8	273	264.8	66.3
34	33.0	8.3	94	91.2	22.8	154	149.4	37.4	214	207.6	52.0	274	265.8	66.6
35	34.0	8.5	95	92.2	23.1	155	150.4	37.7	215	208.6	52.2	275	266.8	66.8
36	34.9	8.7	96	93.1	23.3	156	151.3	37.9	216	209.5	52.5	276	267.7	67.1
37	35.9	9.0	97	94.1	23.6	157	152.3	38.1	217	210.5	52.7	277	268.7	67.3
38	36.9	9.2	98	95.1	23.8	158	153.3	38.4	218	211.5	53.0	278	269.7	67.5
39	37.8	9.5	99	96.0	24.1	159	154.2	38.6	219	212.4	53.2	279	270.6	67.8
40	38.8	9.7	100	97.0	24.3	160	155.2	38.9	220	213.4	53.5	280	271.6	68.0
41	39.8	10.0	101	98.0	24.5	161	156.2	39.1	221	214.4	53.7	281	272.6	68.3
42	40.7	10.2	102	98.9	24.8	162	157.1	39.4	222	215.3	53.9	282	273.5	68.5
43	41.7	10.4	103	99.9	25.0	163	158.1	39.6	223	216.3	54.2	283	274.5	68.8
44	42.7	10.7	104	100.9	25.3	164	159.1	39.8	224	217.3	54.4	284	275.5	69.0
45	43.7	10.9	105	101.9	25.5	165	160.1	40.1	225	218.3	54.7	285	276.5	69.2
46	44.6	11.2	106	102.8	25.8	166	161.0	40.3	226	219.2	54.9	286	277.4	69.5
47	45.6	11.4	107	103.8	26.0	167	162.0	40.6	227	220.2	55.2	287	278.4	69.7
48	46.6	11.7	108	104.8	26.2	168	163.0	40.8	228	221.2	55.4	288	279.4	70.0
49	47.5	11.9	109	105.7	26.5	169	163.9	41.1	229	222.1	55.6	289	280.3	70.2
50	48.5	12.1	110	106.7	26.7	170	164.9	41.3	230	223.1	55.9	290	281.3	70.5
51	49.5	12.4	111	107.7	27.0	171	165.9	41.5	231	224.1	56.1	291	282.3	70.7
52	50.4	12.6	112	108.6	27.2	172	166.8	41.8	232	225.0	56.4	292	283.2	71.0
53	51.4	12.9	113	109.6	27.5	173	167.8	42.0	233	226.0	56.6	293	284.2	71.2
54	52.4	13.1	114	110.6	27.7	174	168.8	42.3	234	227.0	56.9	294	285.2	71.4
55	53.4	13.4	115	111.6	27.9	175	169.8	42.5	235	228.0	57.1	295	286.2	71.7
56	54.3	13.6	116	112.5	28.2	176	170.7	42.8	236	228.9	57.3	296	287.1	71.9
57	55.3	13.8	117	113.5	28.4	177	171.7	43.0	237	229.9	57.6	297	288.1	72.2
58	56.3	14.1	118	114.5	28.7	178	172.7	43.3	238	230.9	57.8	298	289.1	72.4
59	57.2	14.3	119	115.4	28.9	179	173.6	43.5	239	231.8	58.1	299	290.0	72.7
60	58.2	14.6	120	116.4	29.2	180	174.6	43.7	240	232.8	58.3	300	291.0	72.9
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

E. N. E. ¾ E.   E. S. E. ¾ E.   W. N. W. ¾ W.   W. S. W. ¾ W.   [For 6¾ Points.

TABLE VIII.   67

Difference of Latitude and Departure for 1½ Points.

N. by E. ½ E.   N. by W. ½ W.   S. by E. ½ E.   S. by W. ½ W.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.3	61	58.4	17.7	121	115.8	35.1	181	173.2	52.5	241	230.6	70.0
2	1.9	0.6	62	59.3	18.0	122	116.7	35.4	182	174.2	52.8	242	231.6	70.2
3	2.9	0.9	63	60.3	18.3	123	117.7	35.7	183	175.1	53.1	243	232.5	70.5
4	3.8	1.2	64	61.2	18.6	124	118.7	36.0	184	176.1	53.4	244	233.5	70.8
5	4.8	1.5	65	62.2	18.9	125	119.6	36.3	185	177.0	53.7	245	234.5	71.1
6	5.7	1.7	66	63.2	19.2	126	120.6	36.6	186	178.0	54.0	246	235.4	71.4
7	6.7	2.0	67	64.1	19.4	127	121.5	36.9	187	178.9	54.3	247	236.4	71.7
8	7.7	2.3	68	65.1	19.7	128	122.5	37.2	188	179.9	54.6	248	237.3	72.0
9	8.6	2.6	69	66.0	20.0	129	123.4	37.4	189	180.9	54.9	249	238.3	72.3
10	9.6	2.9	70	67.0	20.3	130	124.4	37.7	190	181.8	55.2	250	239.2	72.6
11	10.5	3.2	71	67.9	20.6	131	125.4	38.0	191	182.8	55.4	251	240.2	72.9
12	11.5	3.5	72	68.9	20.9	132	126.3	38.3	192	183.7	55.7	252	241.1	73.2
13	12.4	3.8	73	69.9	21.2	133	127.3	38.6	193	184.7	56.0	253	242.1	73.4
14	13.4	4.1	74	70.8	21.5	134	128.2	38.9	194	185.6	56.3	254	243.1	73.7
15	14.4	4.4	75	71.8	21.8	135	129.2	39.2	195	186.6	56.6	255	244.0	74.0
16	15.3	4.6	76	72.7	22.1	136	130.1	39.5	196	187.6	56.9	256	245.0	74.3
17	16.3	4.9	77	73.7	22.4	137	131.1	39.8	197	188.5	57.2	257	245.9	74.6
18	17.2	5.2	78	74.6	22.6	138	132.1	40.1	198	189.5	57.5	258	246.9	74.9
19	18.2	5.5	79	75.6	22.9	139	133.0	40.3	199	190.4	57.8	259	247.8	75.2
20	19.1	5.8	80	76.6	23.2	140	134.0	40.6	200	191.4	58.1	260	248.8	75.5
21	20.1	6.1	81	77.5	23.5	141	134.9	40.9	201	192.3	58.3	261	249.8	75.8
22	21.1	6.4	82	78.5	23.8	142	135.9	41.2	202	193.3	58.6	262	250.7	76.1
23	22.0	6.7	83	79.4	24.1	143	136.8	41.5	203	194.3	58.9	263	251.7	76.3
24	23.0	7.0	84	80.4	24.4	144	137.8	41.8	204	195.2	59.2	264	252.6	76.6
25	23.9	7.3	85	81.3	24.7	145	138.8	42.1	205	196.2	59.5	265	253.6	76.9
26	24.9	7.5	86	82.3	25.0	146	139.7	42.4	206	197.1	59.8	266	254.5	77.2
27	25.8	7.8	87	83.3	25.3	147	140.7	42.7	207	198.1	60.1	267	255.5	77.5
28	26.8	8.1	88	84.2	25.5	148	141.6	43.0	208	199.0	60.4	268	256.5	77.8
29	27.8	8.4	89	85.2	25.8	149	142.6	43.3	209	200.0	60.7	269	257.4	78.1
30	28.7	8.7	90	86.1	26.1	150	143.5	43.5	210	201.0	61.0	270	258.4	78.4
31	29.7	9.0	91	87.1	26.4	151	144.5	43.8	211	201.9	61.3	271	259.3	78.7
32	30.6	9.3	92	88.0	26.7	152	145.5	44.1	212	202.9	61.5	272	260.3	79.0
33	31.6	9.6	93	89.0	27.0	153	146.4	44.4	213	203.8	61.8	273	261.2	79.2
34	32.5	9.9	94	90.0	27.3	154	147.4	44.7	214	204.8	62.1	274	262.2	79.5
35	33.5	10.2	95	90.9	27.6	155	148.3	45.0	215	205.7	62.4	275	263.2	79.8
36	34.4	10.5	96	91.9	27.9	156	149.3	45.3	216	206.7	62.7	276	264.1	80.1
37	35.4	10.7	97	92.8	28.2	157	150.2	45.6	217	207.7	63.0	277	265.1	80.4
38	36.4	11.0	98	93.8	28.4	158	151.2	45.9	218	208.6	63.3	278	266.0	80.7
39	37.3	11.3	99	94.7	28.7	159	152.2	46.2	219	209.6	63.6	279	267.0	81.0
40	38.3	11.6	100	95.7	29.0	160	153.1	46.4	220	210.5	63.9	280	267.9	81.3
41	39.2	11.9	101	96.7	29.3	161	154.1	46.7	221	211.5	64.2	281	268.9	81.6
42	40.2	12.2	102	97.6	29.6	162	155.0	47.0	222	212.4	64.4	282	269.9	81.9
43	41.1	12.5	103	98.6	29.9	163	156.0	47.3	223	213.4	64.7	283	270.8	82.2
44	42.1	12.8	104	99.5	30.2	164	156.9	47.6	224	214.4	65.0	284	271.8	82.4
45	43.1	13.1	105	100.5	30.5	165	157.9	47.9	225	215.3	65.3	285	272.7	82.7
46	44.0	13.4	106	101.4	30.8	166	158.9	48.2	226	216.3	65.6	286	273.7	83.0
47	45.0	13.6	107	102.4	31.1	167	159.8	48.5	227	217.2	65.9	287	274.6	83.3
48	45.9	13.9	108	103.3	31.4	168	160.8	48.8	228	218.2	66.2	288	275.6	83.6
49	46.9	14.2	109	104.3	31.6	169	161.7	49.1	229	219.1	66.5	289	276.6	83.9
50	47.8	14.5	110	105.3	31.9	170	162.7	49.3	230	220.1	66.8	290	277.5	84.2
51	48.8	14.8	111	106.2	32.2	171	163.6	49.6	231	221.1	67.1	291	278.5	84.5
52	49.8	15.1	112	107.2	32.5	172	164.6	49.9	232	222.0	67.3	292	279.4	84.8
53	50.7	15.4	113	108.1	32.8	173	165.6	50.2	233	223.0	67.6	293	280.4	85.1
54	51.7	15.7	114	109.1	33.1	174	166.5	50.5	234	223.9	67.9	294	281.3	85.3
55	52.6	16.0	115	110.0	33.4	175	167.5	50.8	235	224.9	68.2	295	282.3	85.6
56	53.6	16.3	116	111.0	33.7	176	168.4	51.1	236	225.8	68.5	296	283.3	85.9
57	54.5	16.5	117	112.0	34.0	177	169.4	51.4	237	226.8	68.8	297	284.2	86.2
58	55.5	16.8	118	112.9	34.3	178	170.3	51.7	238	227.8	69.1	298	285.2	86.5
59	56.5	17.1	119	113.9	34.5	179	171.3	52.0	239	228.7	69.4	299	286.1	86.8
60	57.4	17.4	120	114.8	34.8	180	172.2	52.3	240	229.7	69.7	300	287.1	87.1
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

E. N. E. ½ E.   E. S. E. ½ E.   W. N. W. ½ W.   W. S. W. ½ W.   [For 6½ Points.

TABLE VIII.

Difference of Latitude and Departure for 1¼ Points.

N. by E. ¼ E. N. by W. ¼ W. S. by E. ¼ E. S. by W. ¼ W.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.3	61	57.4	20.6	121	113.9	40.8	181	170.4	61.0	241	226.9	81.2
2	1.9	0.7	62	58.4	20.9	122	114.9	41.1	182	171.4	61.3	242	227.9	81.5
3	2.8	1.0	63	59.3	21.2	123	115.8	41.4	183	172.3	61.7	243	228.8	81.9
4	3.8	1.3	64	60.3	21.6	124	116.8	41.8	184	173.2	62.0	244	229.7	82.2
5	4.7	1.7	65	61.2	21.9	125	117.7	42.1	185	174.2	62.3	245	230.7	82.5
6	5.6	2.0	66	62.1	22.2	126	118.6	42.4	186	175.1	62.7	246	231.6	82.9
7	6.6	2.4	67	63.1	22.6	127	119.6	42.8	187	176.1	63.0	247	232.6	83.2
8	7.5	2.7	68	64.0	22.9	128	120.5	43.1	188	177.0	63.3	248	233.5	83.5
9	8.5	3.0	69	65.0	23.2	129	121.5	43.5	189	178.0	63.7	249	234.4	83.9
10	9.4	3.4	70	65.9	23.6	130	122.4	43.8	190	178.9	64.0	250	235.4	84.2
11	10.4	3.7	71	66.8	23.9	131	123.3	44.1	191	179.8	64.3	251	236.3	84.6
12	11.3	4.0	72	67.8	24.3	132	124.3	44.5	192	180.8	64.7	252	237.3	84.9
13	12.2	4.4	73	68.7	24.6	133	125.2	44.8	193	181.7	65.0	253	238.2	85.2
14	13.2	4.7	74	69.7	24.9	134	126.2	45.1	194	182.7	65.4	254	239.2	85.6
15	14.1	5.1	75	70.6	25.3	135	127.1	45.5	195	183.6	65.7	255	240.1	85.9
16	15.1	5.4	76	71.6	25.6	136	128.0	45.8	196	184.5	66.0	256	241.0	86.2
17	16.0	5.7	77	72.5	25.9	137	129.0	46.2	197	185.5	66.4	257	242.0	86.6
18	16.9	6.1	78	73.4	26.3	138	129.9	46.5	198	186.4	66.7	258	242.9	86.9
19	17.9	6.4	79	74.4	26.6	139	130.9	46.8	199	187.4	67.0	259	243.9	87.3
20	18.8	6.7	80	75.3	27.0	140	131.8	47.2	200	188.3	67.4	260	244.8	87.6
21	19.8	7.1	81	76.3	27.3	141	132.8	47.5	201	189.3	67.7	261	245.7	87.9
22	20.7	7.4	82	77.2	27.6	142	133.7	47.8	202	190.2	68.1	262	246.7	88.3
23	21.7	7.7	83	78.1	28.0	143	134.6	48.2	203	191.1	68.4	263	247.6	88.6
24	22.6	8.1	84	79.1	28.3	144	135.6	48.5	204	192.1	68.7	264	248.6	88.9
25	23.5	8.4	85	80.0	28.6	145	136.5	48.8	205	193.0	69.1	265	249.5	89.3
26	24.5	8.8	86	81.0	29.0	146	137.5	49.2	206	194.0	69.4	266	250.5	89.6
27	25.4	9.1	87	81.9	29.3	147	138.4	49.5	207	194.9	69.7	267	251.4	89.9
28	26.4	9.4	88	82.9	29.6	148	139.3	49.9	208	195.8	70.1	268	252.3	90.3
29	27.3	9.8	89	83.8	30.0	149	140.3	50.2	209	196.8	70.4	269	253.3	90.6
30	28.2	10.1	90	84.7	30.3	150	141.2	50.5	210	197.7	70.7	270	254.2	91.0
31	29.2	10.4	91	85.7	30.7	151	142.2	50.9	211	198.7	71.1	271	255.2	91.3
32	30.1	10.8	92	86.6	31.0	152	143.1	51.2	212	199.6	71.4	272	256.1	91.6
33	31.1	11.1	93	87.6	31.3	153	144.1	51.5	213	200.5	71.8	273	257.0	92.0
34	32.0	11.5	94	88.5	31.7	154	145.0	51.9	214	201.5	72.1	274	258.0	92.3
35	33.0	11.8	95	89.4	32.0	155	145.9	52.2	215	202.4	72.4	275	258.9	92.6
36	33.9	12.1	96	90.4	32.3	156	146.9	52.6	216	203.4	72.8	276	259.9	93.0
37	34.8	12.5	97	91.3	32.7	157	147.8	52.9	217	304.3	73.1	277	260.8	93.3
38	35.8	12.8	98	92.3	33.0	158	148.8	53.2	218	205.3	73.4	278	261.7	93.7
39	36.7	13.1	99	93.2	33.4	159	149.7	53.6	219	206.2	73.8	279	262.7	94.0
40	37.7	13.5	100	94.2	33.7	160	150.6	53.9	220	207.1	74.1	280	263.6	94.3
41	38.6	13.8	101	95.1	34.0	161	151.6	54.2	221	208.1	74.5	281	264.6	94.7
42	39.5	14.1	102	96.0	34.4	162	152.5	54.6	222	209.0	74.8	282	265.5	95.0
43	40.5	14.5	103	97.0	34.7	163	153.5	54.9	223	210.0	75.1	283	266.5	95.3
44	41.4	14.8	104	97.9	35.0	164	154.4	55.2	224	210.9	75.5	284	267.4	95.7
45	42.4	15.2	105	98.9	35.4	165	155.4	55.6	225	211.8	75.8	285	268.3	96.0
46	43.3	15.5	106	99.8	35.7	166	156.3	55.9	226	212.8	76.1	286	269.3	96.4
47	44.3	15.8	107	100.7	36.0	167	157.2	56.3	227	213.7	76.5	287	270.2	96.7
48	45.2	16.2	108	101.7	36.4	168	158.2	56.6	228	214.7	76.8	288	271.2	97.0
49	46.1	16.5	109	102.6	36.7	169	159.1	56.9	229	215.6	77.1	289	272.1	97.4
50	47.1	16.8	110	103.6	37.1	170	160.1	57.3	230	216.6	77.5	290	273.0	97.7
51	48.0	17.2	111	104.5	37.4	171	161.0	57.6	231	217.5	77.8	291	274.0	98.0
52	49.0	17.5	112	105.5	37.7	172	161.9	57.9	232	218.4	78.2	292	274.9	98.4
53	49.9	17.9	113	106.4	38.1	173	162.9	58.3	233	219.4	78.5	293	275.9	98.7
54	50.8	18.2	114	107.3	38.4	174	163.8	58.6	234	220.3	78.8	294	276.8	99.0
55	51.8	18.5	115	108.3	38.7	175	164.8	59.0	235	221.3	79.2	295	277.8	99.4
56	52.7	18.9	116	109.2	39.1	176	165.7	59.3	236	222.2	79.5	296	278.7	99.7
57	53.7	19.2	117	110.2	39.4	177	166.7	59.6	237	223.1	79.8	297	279.6	100.1
58	54.6	19.5	118	111.1	39.8	178	167.6	60.0	238	224.1	80.2	298	280.6	100.4
59	55.6	19.9	119	112.0	40.1	179	168.5	60.3	239	225.0	80.5	299	281.5	100.7
60	56.5	20.2	120	113.0	40.4	180	169.5	60.6	240	226.0	80.9	300	282.5	101.1
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

E. N. E. ¼ E. E. S. E. ¼ E. W. N. W. ¼ W. W. S. W. ¼ W. [For 6¼ Points.

TABLE VIII. 69

Difference of Latitude and Departure for 2 Points.

N. N. E.　　　　N. N. W.　　　　S. S. E.　　　　S. S. W.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.4	61	56.4	23.3	121	111.8	46.3	181	167.2	69.3	241	222.7	92.2
2	1.8	0.8	62	57.3	23.7	122	112.7	46.7	182	168.1	69.6	242	223.6	92.6
3	2.8	1.1	63	58.2	24.1	123	113.6	47.1	183	169.1	70.0	243	224.5	93.0
4	3.7	1.5	64	59.1	24.5	124	114.6	47.5	184	170.0	70.4	244	225.4	93.4
5	4.6	1.9	65	60.1	24.9	125	115.5	47.8	185	170.9	70.8	245	226.4	93.8
6	5.5	2.3	66	61.0	25.3	126	116.4	48.2	186	171.8	71.2	246	227.3	94.1
7	6.5	2.7	67	61.9	25.6	127	117.3	48.6	187	172.8	71.6	247	228.2	94.5
8	7.4	3.1	68	62.8	26.0	128	118.3	49.0	188	173.7	71.9	248	229.1	94.9
9	8.3	3.4	69	63.7	26.4	129	119.2	49.4	189	174.6	72.3	249	230.0	95.3
10	9.2	3.8	70	64.7	26.8	130	120.1	49.7	190	175.5	72.7	250	231.0	95.7
11	10.2	4.2	71	65.6	27.2	131	121.0	50.1	191	176.5	73.1	251	231.9	96.1
12	11.1	4.6	72	66.5	27.6	132	122.0	50.5	192	177.4	73.5	252	232.8	96.4
13	12.0	5.0	73	67.4	27.9	133	122.9	50.9	193	178.3	73.9	253	233.7	96.8
14	12.9	5.4	74	68.4	28.3	134	123.8	51.3	194	179.2	74.2	254	234.7	97.2
15	13.9	5.7	75	69.3	28.7	135	124.7	51.7	195	180.2	74.6	255	235.6	97.6
16	14.8	6.1	76	70.2	29.1	136	125.6	52.0	196	181.1	75.0	256	236.5	98.0
17	15.7	6.5	77	71.1	29.5	137	126.6	52.4	197	182.0	75.4	257	237.4	98.3
18	16.6	6.9	78	72.1	29.8	138	127.5	52.8	198	182.9	75.8	258	238.4	98.7
19	17.6	7.3	79	73.0	30.2	139	128.4	53.2	199	183.9	76.2	259	239.3	99.1
20	18.5	7.7	80	73.9	30.6	140	129.3	53.6	200	184.8	76.5	260	240.2	99.5
21	19.4	8.0	81	74.8	31.0	141	130.3	54.0	201	185.7	76.9	261	241.1	99.9
22	20.3	8.4	82	75.8	31.4	142	131.2	54.3	202	186.6	77.3	262	242.1	100.3
23	21.2	8.8	83	76.7	31.8	143	132.1	54.7	203	187.5	77.7	263	243.0	100.6
24	22.2	9.2	84	77.6	32.1	144	133.0	55.1	204	188.5	78.1	264	243.9	101.0
25	23.1	9.6	85	78.5	32.5	145	134.0	55.5	205	189.4	78.5	265	244.8	101.4
26	24.0	9.9	86	79.5	32.9	146	134.9	55.9	206	190.3	78.8	266	245.8	101.8
27	24.9	10.3	87	80.4	33.3	147	135.8	56.3	207	191.2	79.2	267	246.7	102.2
28	25.9	10.7	88	81.3	33.7	148	136.7	56.6	208	192.2	79.6	268	247.6	102.6
29	26.8	11.1	89	82.2	34.1	149	137.7	57.0	209	193.1	80.0	269	248.5	102.9
30	27.7	11.5	90	83.1	34.4	150	138.6	57.4	210	194.0	80.4	270	249.4	103.3
31	28.6	11.9	91	84.1	34.8	151	139.5	57.8	211	194.9	80.7	271	250.4	103.7
32	29.6	12.2	92	85.0	35.2	152	140.4	58.2	212	195.9	81.1	272	251.3	104.1
33	30.5	12.6	93	85.9	35.6	153	141.4	58.6	213	196.8	81.5	273	252.2	104.5
34	31.4	13.0	94	86.8	36.0	154	142.3	58.9	214	197.7	81.9	274	253.1	104.9
35	32.3	13.4	95	87.8	36.4	155	143.2	59.3	215	198.6	82.3	275	254.1	105.2
36	33.3	13.8	96	88.7	36.7	156	144.1	59.7	216	199.6	82.7	276	255.0	105.6
37	34.2	14.2	97	89.6	37.1	157	145.0	60.1	217	200.5	83.0	277	255.9	106.0
38	35.1	14.5	98	90.5	37.5	158	146.0	60.5	218	201.4	83.4	278	256.8	106.4
39	36.0	14.9	99	91.5	37.9	159	146.9	60.8	219	202.3	83.8	279	257.8	106.8
40	37.0	15.3	100	92.4	38.3	160	147.8	61.2	220	203.3	84.2	280	258.7	107.2
41	37.9	15.7	101	93.3	38.7	161	148.7	61.6	221	204.2	84.6	281	259.6	107.5
42	38.8	16.1	102	94.2	39.0	162	149.7	62.0	222	205.1	85.0	282	260.5	107.9
43	39.7	16.5	103	95.2	39.4	163	150.6	62.4	223	206.0	85.3	283	261.5	108.3
44	40.7	16.8	104	96.1	39.8	164	151.5	62.8	224	206.9	85.7	284	262.4	108.7
45	41.6	17.2	105	97.0	40.2	165	152.4	63.1	225	207.9	86.1	285	263.3	109.1
46	42.5	17.6	106	97.9	40.6	166	153.4	63.5	226	208.8	86.5	286	264.2	109.4
47	43.4	18.0	107	98.9	40.9	167	154.3	63.9	227	209.7	86.9	287	265.2	109.8
48	44.3	18.4	108	99.8	41.3	168	155.2	64.3	228	210.6	87.3	288	266.1	110.2
49	45.3	18.8	109	100.7	41.7	169	156.1	64.7	229	211.6	87.6	289	267.0	110.6
50	46.2	19.1	110	101.6	42.1	170	157.1	65.1	230	212.5	88.0	290	267.9	111.0
51	47.1	19.5	111	102.6	42.5	171	158.0	65.4	231	213.4	88.4	291	268.8	111.4
52	48.0	19.9	112	103.5	42.9	172	158.9	65.8	232	214.3	88.8	292	269.8	111.7
53	49.0	20.3	113	104.4	43.2	173	159.8	66.2	233	215.3	89.2	293	270.7	112.1
54	49.9	20.7	114	105.3	43.6	174	160.8	66.6	234	216.2	89.5	294	271.6	112.5
55	50.8	21.0	115	106.2	44.0	175	161.7	67.0	235	217.1	89.9	295	272.5	112.9
56	51.7	21.4	116	107.2	44.4	176	162.6	67.4	236	218.0	90.3	296	273.5	113.3
57	52.7	21.8	117	108.1	44.8	177	163.6	67.7	237	219.0	90.7	297	274.4	113.7
58	53.6	22.2	118	109.0	45.2	178	164.5	68.1	238	219.9	91.1	298	275.3	114.0
59	54.5	22.6	119	109.9	45.5	179	165.4	68.5	239	220.8	91.5	299	276.2	114.4
60	55.4	23.0	120	110.9	45.9	180	166.3	68.9	240	221.7	91.8	300	277.2	114.8
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

E. N. E.　　　　E. S. E.　　　　W. N. W.　　　　W. S. W.　　　　[For 6 Points.

TABLE VIII.

Difference of Latitude and Departure for 2¼ Points.

N. N. E. ¼ E.   N. N. W. ¼ W.   S. S. E. ¼ E.   S. S. W. ¼ W.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.4	61	55.1	26.1	121	109.4	51.7	181	163.6	77.4	241	217.9	103.0
2	1.8	0.9	62	56.0	26.5	122	110.3	52.2	182	164.5	77.8	242	218.8	103.5
3	2.7	1.3	63	57.0	26.9	123	111.2	52.6	183	165.4	78.2	243	219.7	103.9
4	3.6	1.7	64	57.9	27.4	124	112.1	53.0	184	166.3	78.7	244	220.6	104.3
5	4.5	2.1	65	58.8	27.8	125	113.0	53.4	185	167.2	79.1	245	221.5	104.8
6	5.4	2.6	66	59.7	28.2	126	113.9	53.9	186	168.1	79.5	246	222.4	105.2
7	6.3	3.0	67	60.6	28.6	127	114.8	54.3	187	169.0	80.0	247	223.3	105.6
8	7.2	3.4	68	61.5	29.1	128	115.7	54.7	188	169.9	80.4	248	224.2	106.0
9	8.1	3.8	69	62.4	29.5	129	116.6	55.2	189	170.9	80.8	249	225.1	106.5
10	9.0	4.3	70	63.3	29.9	130	117.5	55.6	190	171.8	81.2	250	226.0	106.9
11	9.9	4.7	71	64.2	30.4	131	118.4	56.0	191	172.7	81.7	251	226.9	107.3
12	10.8	5.1	72	65.1	30.8	132	119.3	56.4	192	173.6	82.1	252	227.8	107.7
13	11.8	5.6	73	66.0	31.2	133	120.2	56.9	193	174.5	82.5	253	228.7	108.2
14	12.7	6.0	74	66.9	31.6	134	121.1	57.3	194	175.4	82.9	254	229.6	108.6
15	13.6	6.4	75	67.8	321	135	122.0	57.7	195	176.3	83.4	255	230.5	109.0
16	14.5	6.8	76	68.7	32.5	136	122.9	58.1	196	177.2	83.8	256	231.4	109.5
17	15.4	7.3	77	69.6	32.9	137	123.8	58.6	197	178.1	84.2	257	232.3	109.9
18	16.3	7.7	78	70.5	33.3	138	124.8	59.0	198	179.0	84.7	258	233.2	110.3
19	17.2	8.1	79	71.4	33.8	139	125.7	59.4	199	179.9	85.1	259	234.1	110.7
20	18.1	8.6	80	72.3	34.2	140	126.6	59.9	200	180.8	85.5	260	235.0	111.2
21	19.0	9.0	81	73.2	34.6	141	127.5	60.3	201	181.7	85.9	261	235.9	111.6
22	19.9	9.4	82	74.1	35.1	142	128.4	60.7	202	182.6	86.4	262	236.8	112.0
23	20.8	9.8	83	75.0	35.5	143	129.3	61.1	203	183.5	86.8	263	237.7	112.4
24	21.7	10.3	84	75.9	35.9	144	130.2	61.6	204	184.4	87.2	264	238.7	112.9
25	22.6	10.7	85	76.8	36.3	145	131.1	62.0	205	185.3	87.6	265	239.6	113.3
26	23.5	11.1	86	77.7	36.8	146	132.0	62.4	206	186.2	88.1	266	240.5	113.7
27	24.4	11.5	87	78.6	37.2	147	132.9	62.9	207	187.1	88.5	267	241.4	114.2
28	25.3	12.0	88	79.6	37.6	148	133.8	63.3	208	188.0	88.9	268	242.3	114.6
29	26.2	12.4	89	80.5	38.1	149	134.7	63.7	209	188.9	89.4	269	243.2	115.0
30	27.1	12.8	90	81.4	38.5	150	135.6	64.1	210	189.8	89.8	270	244.1	115.4
31	28.0	13.3	91	82.3	38.9	151	136.5	64.6	211	190.7	90.2	271	245.0	115.9
32	28.9	13.7	92	83.2	39.3	152	137.4	65.0	212	191.6	90.6	272	245.9	116.3
33	29.8	14.1	93	84.1	39.8	153	138.3	65.4	213	192.5	91.1	273	246.8	116.7
34	30.7	14.5	94	85.0	40.2	154	139.2	65.8	214	193 5	91.5	274	247.7	117.2
35	31.6	15.0	95	85.9	40.6	155	140.1	66.3	215	194.4	91.9	275	248.6	117.6
36	32.5	15.4	96	86.8	41.0	156	141.0	66.7	216	195.3	92.4	276	249.5	118.0
37	33.4	15.8	97	87.7	41.5	157	141.9	67.1	217	196.2	92.8	277	250.4	118.4
38	34.4	16.2	98	88.6	41.9	158	142.8	67.6	218	197.1	93.2	278	251.3	118.9
39	35.3	16.7	99	89.5	42.3	159	143.7	68.0	219	198.0	93.6	279	252.2	119.3
40	36.2	17.1	100	90.4	42.8	160	144.6	68.4	220	198.9	94.1	280	253.1	119.7
41	37.1	17.5	101	91.3	43.2	161	145.5	68.8	221	199.8	94.5	281	254.0	120.1
42	38.0	18.0	102	92.2	43.6	162	146.4	69.3	222	200.7	94.9	282	254.9	120.6
43	38.9	18.4	103	93.1	44.0	163	147.4	69.7	223	201.6	95.3	283	255.8	121.0
44	39.8	18.8	104	94.0	44.5	164	148.3	70.1	224	202.5	95.8	284	256.7	121.4
45	40.7	19.2	105	94.9	44.9	165	149.2	70.5	225	203.4	96.2	285	257.6	121.9
46	41.6	19.7	106	95.8	45.3	166	150.1	71.0	226	204.3	96.6	286	258.5	122.3
47	42.5	20.1	107	96.7	45.7	167	151.0	71.4	227	205.2	97.1	287	259.4	122.7
48	43.4	20.5	108	97.6	46.2	168	151.9	71.8	228	206.1	97.5	288	260.3	123.1
49	44.3	21.0	109	98.5	46.6	169	152.8	72.3	229	207.0	97.9	289	261.3	123.6
50	45.2	21.4	110	99.4	47.0	170	153.7	72.7	230	207.9	98.3	290	262.2	124.0
51	46.1	21.8	111	100.3	47.5	171	154.6	73.1	231	208.8	98.8	291	263.1	124.4
52	47.0	22.2	112	101.2	47.9	172	155.5	73.5	232	209.7	99.2	292	264.0	124.8
53	47.9	22.7	113	102.2	48.3	173	156.4	74.0	233	210.6	99.6	293	264.9	125.3
54	48.8	23.1	114	103.1	48.7	174	157.3	74.4	234	211.5	100.0	294	265.8	125.7
55	49.7	23.5	115	104.0	49.2	175	158.2	74.8	235	212.4	100.5	295	266.7	126.1
56	50.6	23.9	116	104.9	49.6	176	159.1	75.2	236	213.3	100.9	296	267.6	126.6
57	51.5	24.4	117	105.8	50.0	177	160.0	75.7	237	214.2	101.3	297	268.5	127.0
58	52.4	24.8	118	106.7	50.5	178	160.9	76.1	238	215.1	101.8	298	269.4	127.4
59	53.3	25.2	119	107.6	50.9	179	161.8	76.5	239	216.1	102.2	299	270.3	127.8
60	54.2	25.7	120	108.5	51.3	180	162.7	77.0	240	217.0	102.6	300	271.2	128.3
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

N. E. by E. ¾ E.   S. E. by E. ¾ E.   N. W. by W. ¾ W.   S. W. by W. ¾ W.   [For 5¾ Points.

TABLE VIII.

Difference· of Latitude and Departure for 2½ Points.

N. N. E. ¼ E.   N. N. W. ½ W.   S. S. E. ¼ E.   S. S. W. ½ W.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.5	61	53.8	28.8	121	106.7	57.0	181	159.6	85.3	241	212.5	113.6
2	1.8	0.9	62	54.7	29.2	122	107.6	57.5	182	160.5	85.8	242	213.4	114.1
3	2.6	1.4	63	55.6	29.7	123	108.5	58.0	183	161.4	86.3	243	214.3	114.5
4	3.5	1.9	64	56.4	30.2	124	109.4	58.5	184	162.3	86.7	244	215.2	115.0
5	4.4	2.4	65	57.3	30.6	125	110.2	58.9	185	163.2	87.2	245	216.1	115.5
6	5.3	2.8	66	58.2	31.1	126	111.1	59.4	186	164.0	87.7	246	217.0	116.0
7	6.2	3.3	67	59.1	31.6	127	112.0	59.9	187	164.9	88.2	247	217.8	116.4
8	7.1	3.8	68	60.0	32.1	128	112.9	60.3	188	165.8	88.6	248	218.7	116.9
9	7.9	4.2	69	60.9	32.5	129	113.8	60.8	189	166.7	89.1	249	219.6	117.4
10	8.8	4.7	70	61.7	33.0	130	114.6	61.3	190	167.6	89.6	250	220.5	117.8
11	9.7	5.2	71	62.6	33.5	131	115.5	61.8	191	168.4	90.0	251	221.4	118.3
12	10.6	5.7	72	63.5	33.9	132	116.4	62.2	192	169.3	90.5	252	222.2	118.8
13	11.5	6.1	73	64.4	34.4	133	117.3	62.7	193	170.2	91.0	253	223.1	119.3
14	12.3	6.6	74	65.3	34.9	134	118.2	63.2	194	171.1	91.5	254	224.0	119.7
15	13.2	7.1	75	66.1	35.4	135	119.1	63.6	195	172.0	91.9	255	224.9	120.2
16	14.1	7.5	76	67.0	35.8	136	119.9	64.1	196	172.9	92.4	256	225.8	120.7
17	15.0	8.0	77	67.9	36.3	137	120.8	64.6	197	173.7	92.9	257	226.7	121.1
18	15.9	8.5	78	68.8	36.8	138	121.7	65.1	198	174.6	93.3	258	227.5	121.6
19	16.8	9.0	79	69.7	37.2	139	122.6	65.5	199	175.5	93.8	259	228.4	122.1
20	17.6	9.4	80	70.6	37.7	140	123.5	66.0	200	176.4	94.3	260	229.3	122.6
21	18.5	9.9	81	71.4	38.2	141	124.4	66.5	201	177.3	94.8	261	230.2	123.0
22	19.4	10.4	82	72.3	38.7	142	125.2	66.9	202	178.1	95.2	262	231.1	123.5
23	20.3	10.8	83	73.2	39.1	143	126.1	67.4	203	179.0	95.7	263	231.9	124.0
24	21.2	11.3	84	74.1	39.6	144	127.0	67.9	204	179.9	96.2	264	232.8	124.4
25	22.0	11.8	85	75.0	40.1	145	127.9	68.4	205	180.8	96.6	265	233.7	124.9
26	22.9	12.3	86	75.8	40.5	146	128.8	68.8	206	181.7	97.1	266	234.6	125.4
27	23.8	12.7	87	76.7	41.0	147	129.6	69.3	207	182.6	97.6	267	235.5	125.9
28	24.7	13.2	88	77.6	41.5	148	130.5	69.8	208	183.4	98.1	268	236.4	126.3
29	25.6	13.7	89	78.5	42.0	149	131.4	70.2	209	184.3	98.5	269	237.2	126.8
30	26.5	14.1	90	79.4	42.4	150	132.3	70.7	210	185.2	99.0	270	238.1	127.3
31	27.3	14.6	91	80.3	42.9	151	133.2	71.2	211	186.1	99.5	271	239.0	127.7
32	28.2	15.1	92	81.1	43.4	152	134.1	71.7	212	187.0	99.9	272	239.9	128.2
33	29.1	15.6	93	82.0	43.8	153	134.9	72.1	213	187.8	100.4	273	240.8	128.7
34	30.0	16.0	94	82.9	44.3	154	135.8	72.6	214	188.7	100.9	274	241.6	129.2
35	30.9	16.5	95	83.8	44.8	155	136.7	73.1	215	189.6	101.4	275	242.5	129.6
36	31.7	17.0	96	84.7	45.3	156	137.6	73.5	216	190.5	101.8	276	243.4	130.1
37	32.6	17.4	97	85.5	45.7	157	138.5	74.0	217	191.4	102.3	277	244.3	130.6
38	33.5	17.9	98	86.4	46.2	158	139.3	74.5	218	192.3	102.8	278	245.2	131.0
39	34.4	18.4	99	87.3	46.7	159	140.2	75.0	219	193.1	103.2	279	246.1	131.5
40	35.3	18.9	100	88.2	47.1	160	141.1	75.4	220	194.0	103.7	280	246.9	132.0
41	36.2	19.3	101	89.1	47.6	161	142.0	75.9	221	194.9	104.2	281	247.8	132.5
42	37.0	19.8	102	90.0	48.1	162	142.9	76.4	222	195.8	104.7	282	248.7	132.9
43	37.9	20.3	103	90.8	48.6	163	143.8	76.8	223	196.7	105.1	283	249.6	133.4
44	38.8	20.7	104	91.7	49.0	164	144.6	77.3	224	197.6	105.6	284	250.5	133.9
45	39.7	21.2	105	92.6	49.5	165	145.5	77.8	225	198.4	106.1	285	251.3	134.3
46	40.6	21.7	106	93.5	50.0	166	146.4	78.3	226	199.3	106.5	286	252.2	134.8
47	41.5	22.2	107	94.4	50.4	167	147.3	78.7	227	200.2	107.0	287	253.1	135.3
48	42.3	22.6	108	95.2	50.9	168	148.2	79.2	228	201.1	107.5	288	254.0	135.8
49	43.2	23.1	109	96.1	51.4	169	149.0	79.7	229	202.0	107.9	289	254.9	136.2
50	44.1	23.6	110	97.0	51.9	170	149.9	80.1	230	202.8	108.4	290	255.8	136.7
51	45.0	24.0	111	97.9	52.3	171	150.8	80.6	231	203.7	108.9	291	256.6	137.2
52	45.9	24.5	112	98.8	52.8	172	151.7	81.1	232	204.6	109.4	292	257.5	137.6
53	46.7	25.0	113	99.7	53.3	173	152.6	81.6	233	205.5	109.8	293	258.4	138.1
54	47.6	25.5	114	100.5	53.7	174	153.5	82.0	234	206.4	110.3	294	259.3	138.6
55	48.5	25.9	115	101.4	54.2	175	154.3	82.5	235	207.3	110.8	295	260.2	139.1
56	49.4	26.4	116	102.3	54.7	176	155.2	83.0	236	208.1	111.2	296	261.0	139.5
57	50.3	26.9	117	103.2	55.2	177	156.1	83.4	237	209.0	111.7	297	261.9	140.0
58	51.2	27.3	118	104.1	55.6	178	157.0	83.9	238	209.9	112.2	298	262.8	140.5
59	52.0	27.8	119	104.9	56.1	179	157.9	84.4	239	210.8	112.7	299	263.7	140.9
60	52.9	28.3	120	105.8	56.6	180	158.7	84.9	240	211.7	113.1	300	264.6	141.4
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE VIII.

Difference of Latitude and Departure for 2¾ Points.

N. N. E. ¾ E.   N. N. W. ¾ W.   S. S. E. ¾ E.   S. S. W. ¾ W.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.5	61	52.3	31.4	121	103.8	62.2	181	155.2	93.1	241	206.7	123.9
2	1.7	1.0	62	53.2	31.9	122	104.6	62.7	182	156.1	93.6	242	207.6	124.4
3	2.6	1.5	63	54.0	32.4	123	105.5	63.2	183	157.0	94.1	243	208.4	124.9
4	3.4	2.1	64	54.9	32.9	124	106.4	63.7	184	157.8	94.6	244	209.3	125.4
5	4.3	2.6	65	55.8	33.4	125	107.2	64.3	185	158.7	95.1	245	210.1	126.0
6	5.1	3.1	66	56.6	33.9	126	108.1	64.8	186	159.5	95.6	246	211.0	126.5
7	6.0	3.6	67	57.5	34.4	127	108.9	65.3	187	160.4	96.1	247	211.9	127.0
8	6.9	4.1	68	58.3	35.0	128	109.8	65.8	188	161.3	96.7	248	212.7	127.5
9	7.7	4.6	69	59.2	35.5	129	110.6	66.3	189	162.1	97.2	249	213.6	128.0
10	8.6	5.1	70	60.0	36.0	130	111.5	66.8	190	163.0	97.7	250	214.4	128.5
11	9.4	5.7	71	60.9	36.5	131	112.4	67.3	191	163.8	98.2	251	215.3	129.0
12	10.3	6.2	72	61.8	37.0	132	113.2	67.9	192	164.7	98.7	252	216.1	129.6
13	11.2	6.7	73	62.6	37.5	133	114.1	68.4	193	165.5	99.2	253	217.0	130.1
14	12.0	7.2	74	63.5	38.0	134	114.9	68.9	194	166.4	99.7	254	217.9	130.6
15	12.9	7.7	75	64.3	38.6	135	115.8	69.4	195	167.3	100.3	255	218.7	131.1
16	13.7	8.2	76	65.2	39.1	136	116.7	69.9	196	168.1	100.8	256	219.6	131.6
17	14.6	8.7	77	66.0	39.6	137	117.5	70.4	197	169.0	101.3	257	220.4	132.1
18	15.4	9.3	78	66.9	40.1	138	118.4	70.9	198	169.8	101.8	258	221.3	132.6
19	16.3	9.8	79	67.8	40.6	139	119.2	71.5	199	170.7	102.3	259	222.2	133.2
20	17.2	10.3	80	68.6	41.1	140	120.1	72.0	200	171.5	102.8	260	223.0	133.7
21	18.0	10.8	81	69.5	41.6	141	120.9	72.5	201	172.4	103.3	261	223.9	134.2
22	18.9	11.3	82	70.3	42.2	142	121.8	73.0	202	173.3	103.8	262	224.7	134.7
23	19.7	11.8	83	71.2	42.7	143	122.7	73.5	203	174.1	104.4	263	225.6	135.2
24	20.6	12.3	84	72.0	43.2	144	123.5	74.0	204	175.0	104.9	264	226.4	135.7
25	21.4	12.9	85	72.9	43.7	145	124.4	74.5	205	175.8	105.4	265	227.3	136.2
26	22.3	13.4	86	73.8	44.2	146	125.2	75.1	206	176.7	105.9	266	228.2	136.8
27	23.2	13.9	87	74.6	44.7	147	126.1	75.6	207	177.5	106.4	267	229.0	137.3
28	24.0	14.4	88	75.5	45.2	148	126.9	76.1	208	178.4	106.9	268	229.9	137.8
29	24.9	14.9	89	76.3	45.8	149	127.8	76.6	209	179.3	107.4	269	230.7	138.3
30	25.7	15.4	90	77.2	46.3	150	128.7	77.1	210	180.1	108.0	270	231.6	138.8
31	26.6	15.9	91	78.1	46.8	151	129.5	77.6	211	181.0	108.5	271	232.4	139.3
32	27.4	16.5	92	78.9	47.3	152	130.4	78.1	212	181.8	109.0	272	233.3	139.8
33	28.3	17.0	93	79.8	47.8	153	131.2	78.7	213	182.7	109.5	273	234.2	140.4
34	29.2	17.5	94	80.6	48.3	154	132.1	79.2	214	183.6	110.0	274	235.0	140.9
35	30.0	18.0	95	81.5	48.8	155	132.9	79.7	215	184.4	110.5	275	235.9	141.4
36	30.9	18.5	96	82.3	49.4	156	133.8	80.2	216	185.3	111.0	276	236.7	141.9
37	31.7	19.0	97	83.2	49.9	157	134.7	80.7	217	186.1	111.6	277	237.6	142.4
38	32.6	19.5	98	84.1	50.4	158	135.5	81.2	218	187.0	112.1	278	238.4	142.9
39	33.5	20.1	99	84.9	50.9	159	136.4	81.7	219	187.8	112.6	279	239.3	143.4
40	34.3	20.6	100	85.8	51.4	160	137.2	82.3	220	188.7	113.1	280	240.2	143.9
41	35.2	21.1	101	86.6	51.9	161	138.1	82.8	221	189.6	113.6	281	241.0	144.5
42	36.0	21.6	102	87.5	52.4	162	139.0	83.3	222	190.4	114.1	282	241.9	145.0
43	36.9	22.1	103	88.3	53.0	163	139.8	83.8	223	191.3	114.6	283	242.7	145.5
44	37.7	22.6	104	89.2	53.5	164	140.7	84.3	224	192.1	115.2	284	243.6	146.0
45	38.6	23.1	105	90.1	54.0	165	141.5	84.8	225	193.0	115.7	285	244.5	146.5
46	39.5	23.6	106	90.9	54.5	166	142.4	85.3	226	193.8	116.2	286	245.3	147.0
47	40.3	24.2	107	91.8	55.0	167	143.2	85.9	227	194.7	116.7	287	246.2	147.5
48	41.2	24.7	108	92.6	55.5	168	144.1	86.4	228	195.6	117.2	288	247.0	148.1
49	42.0	25.2	109	93.5	56.0	169	145.0	86.9	229	196.4	117.7	289	247.9	148.6
50	42.9	25.7	110	94.4	56.6	170	145.8	87.4	230	197.3	118.2	290	248.7	149.1
51	43.7	26.2	111	95.2	57.1	171	146.7	87.9	231	198.1	118.8	291	249.6	149.6
52	44.6	26.7	112	96.1	57.6	172	147.5	88.4	232	199.0	119.3	292	250.5	150.1
53	45.5	27.2	113	96.9	58.1	173	148.4	88.9	233	199.9	119.8	293	251.3	150.6
54	46.3	27.8	114	97.8	58.6	174	149.2	89.5	234	200.7	120.3	294	252.2	151.1
55	47.2	28.3	115	98.6	59.1	175	150.1	90.0	235	201.6	120.8	295	253.0	151.7
56	48.0	28.8	116	99.5	59.6	176	151.0	90.5	236	202.4	121.3	296	253.9	152.2
57	48.9	29.3	117	100.4	60.2	177	151.8	91.0	237	203.3	121.8	297	254.7	152.7
58	49.7	29.8	118	101.2	60.7	178	152.7	91.5	238	204.1	122.4	298	255.6	153.2
59	50.6	30.3	119	102.1	61.2	179	153.5	92.0	239	205.0	122.9	299	256.5	153.7
60	51.5	30.8	120	102.9	61.7	180	154.4	92.5	240	205.9	123.4	300	257.3	154.2
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

N. E. by E. ¼ E.   S. E. by E. ¼ E.   N. W. by W. ¼ W.   S. W. by W. ¼ W.   [For 5¼ Points.

TABLE VIII.

Difference of Latitude and Departure for 3 Points.

N. E. by N.   N. W. by N.   S. E. by S.   S. W. by S.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	50.7	33.9	121	100.6	67.2	181	150.5	100.6	241	200.4	133.9
2	1.7	1.1	62	51.6	34.4	122	101.4	67.8	182	151.3	101.1	242	201.2	134.4
3	2.5	1.7	63	52.4	35.0	123	102.3	68.3	183	152.2	101.7	243	202.0	135.0
4	3.3	2.2	64	53.2	35.6	124	103.1	68.9	184	153.0	102.2	244	202.9	135.6
5	4.2	2.8	65	54.0	36.1	125	103.9	69.4	185	153.8	102.8	245	203.7	136.1
6	5.0	3.3	66	54.9	36.7	126	104.8	70.0	186	154.7	103.3	246	204.5	136.7
7	5.8	3.9	67	55.7	37.2	127	105.6	70.6	187	155.5	103.9	247	205.4	137.2
8	6.7	4.4	68	56.5	37.8	128	106.4	71.1	188	156.3	104.4	248	206.2	137.8
9	7.5	5.0	69	57.4	38.3	129	107.3	71.7	189	157.1	105.0	249	207.0	138.3
10	8.3	5.6	70	58.2	38.9	130	108.1	72.2	190	158.0	105.6	250	207.9	138.9
11	9.1	6.1	71	59.0	39.4	131	108.9	72.8	191	158.8	106.1	251	208.7	139.4
12	10.0	6.7	72	59.9	40.0	132	109.8	73.3	192	159.6	106.7	252	209.5	140.0
13	10.8	7.2	73	60.7	40.6	133	110.6	73.9	193	160.5	107.2	253	210.4	140.6
14	11.6	7.8	74	61.5	41.1	134	111.4	74.4	194	161.3	107.8	254	211.2	141.1
15	12.5	8.3	75	62.4	41.7	135	112.2	75.0	195	162.1	108.3	255	212.0	141.7
16	13.3	8.9	76	63.2	42.2	136	113.1	75.6	196	163.0	108.9	256	212.9	142.2
17	14.1	9.4	77	64.0	42.8	137	113.9	76.1	197	163.8	109.4	257	213.7	142.8
18	15.0	10.0	78	64.9	43.3	138	114.7	76.7	198	164.6	110.0	258	214.5	143.3
19	15.8	10.6	79	65.7	43.9	139	115.6	77.2	199	165.5	110.6	259	215.4	143.9
20	16.6	11.1	80	66.5	44.4	140	116.4	77.8	200	166.3	111.1	260	216.2	144.4
21	17.5	11.7	81	67.3	45.0	141	117.2	78.3	201	167.1	111.7	261	217.0	145.0
22	18.3	12.2	82	68.2	45.6	142	118.1	78.9	202	168.0	112.2	262	217.8	145.6
23	19.1	12.8	83	69.0	46.1	143	118.9	79.4	203	168.8	112.8	263	218.7	146.1
24	20.0	13.3	84	69.8	46.7	144	119.7	80.0	204	169.6	113.3	264	219.5	146.7
25	20.8	13.9	85	70.7	47.2	145	120.6	80.6	205	170.5	113.9	265	220.3	147.2
26	21.6	14.4	86	71.5	47.8	146	121.4	81.1	206	171.3	114.4	266	221.2	147.8
27	22.4	15.0	87	72.3	48.3	147	122.2	81.7	207	172.1	115.0	267	222.0	148.3
28	23.3	15.6	88	73.2	48.9	148	123.1	82.2	208	172.9	115.6	268	222.8	148.9
29	24.1	16.1	89	74.0	49.4	149	123.9	82.8	209	173.8	116.1	269	223.7	149.4
30	24.9	16.7	90	74.8	50.0	150	124.7	83.3	210	174.6	116.7	270	224.5	150.0
31	25.8	17.2	91	75.7	50.6	151	125.6	83.9	211	175.4	117.2	271	225.3	150.6
32	26.6	17.8	92	76.5	51.1	152	126.4	84.4	212	176.3	117.8	272	226.2	151.1
33	27.4	18.3	93	77.3	51.7	153	127.2	85.0	213	177.1	118.3	273	227.0	151.7
34	28.3	18.9	94	78.2	52.2	154	128.0	85.6	214	177.9	118.9	274	227.8	152.2
35	29.1	19.4	95	79.0	52.8	155	128.9	86.1	215	178.8	119.4	275	228.7	152.8
36	29.9	20.0	96	79.8	53.3	156	129.7	86.7	216	179.6	120.0	276	229.5	153.3
37	30.8	20.6	97	80.7	53.9	157	130.5	87.2	217	180.4	120.6	277	230.3	153.9
38	31.6	21.1	98	81.5	54.4	158	131.4	87.8	218	181.3	121.1	278	231.1	154.4
39	32.4	21.7	99	82.3	55.0	159	132.2	88.3	219	182.1	121.7	279	232.0	155.0
40	33.3	22.2	100	83.1	55.6	160	133.0	88.9	220	182.9	122.2	280	232.8	155.6
41	34.1	22.8	101	84.0	56.1	161	133.9	89.4	221	183.8	122.8	281	233.6	156.1
42	34.9	23.3	102	84.8	56.7	162	134.7	90.0	222	184.6	123.3	282	234.5	156.7
43	35.8	23.9	103	85.6	57.2	163	135.5	90.6	223	185.4	123.9	283	235.3	157.2
44	36.6	24.4	104	86.5	57.8	164	136.4	91.1	224	186.2	124.4	284	236.1	157.8
45	37.4	25.0	105	87.3	58.3	165	137.2	91.7	225	187.1	125.0	285	237.0	158.3
46	38.2	25.6	106	88.1	58.9	166	138.0	92.2	226	187.9	125.6	286	237.8	158.9
47	39.1	26.1	107	89.0	59.4	167	138.9	92.8	227	188.7	126.1	287	238.6	159.4
48	39.9	26.7	108	89.8	60.0	168	139.7	93.3	228	189.6	126.7	288	239.5	160.0
49	40.7	27.2	109	90.6	60.6	169	140.5	93.9	229	190.4	127.2	289	240.3	160.6
50	41.6	27.8	110	91.5	61.1	170	141.3	94.4	230	191.2	127.8	290	241.1	161.1
51	42.4	28.3	111	92.3	61.7	171	142.2	95.0	231	192.1	128.3	291	242.0	161.7
52	43.2	28.9	112	93.1	62.2	172	143.0	95.6	232	192.9	128.9	292	242.8	162.2
53	44.1	29.4	113	94.0	62.8	173	143.8	96.1	233	193.7	129.4	293	243.6	162.8
54	44.9	30.0	114	94.8	63.3	174	144.7	96.7	234	194.6	130.0	294	244.5	163.3
55	45.7	30.6	115	95.6	63.9	175	145.5	97.2	235	195.4	130.6	295	245.3	163.9
56	46.6	31.1	116	96.5	64.4	176	146.3	97.8	236	196.2	131.1	296	246.1	164.4
57	47.4	31.7	117	97.3	65.0	177	147.2	98.3	237	197.1	131.7	297	246.9	165.0
58	48.2	32.2	118	98.1	65.6	178	148.0	98.9	238	197.9	132.2	298	247.8	165.6
59	49.1	32.8	119	98.9	66.1	179	148.8	99.4	239	198.7	132.8	299	248.6	166.1
60	49.9	33.3	120	99.8	66.7	180	149.7	100.0	240	199.6	133.3	300	249.4	166.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

N. E. by E.   S. E. by E.   N. W. by W.   S. W. by W.   [For 5 Points.

TABLE VIII.

Difference of Latitude and Departure for 3¼ Points.

N. E. ¾ N.　　　**N. W. ¾ N.**　　　**S. E. ¾ S.**　　　**S. W. ¾ S.**

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	49.0	36.3	121	97.2	72.1	181	145.4	107.8	241	193.6	143.6
2	1.6	1.2	62	49.8	36.9	122	98.0	72.7	182	146.2	108.4	242	194.4	144.2
3	2.4	1.8	63	50.6	37.5	123	98.8	73.3	183	147.0	109.0	243	195.2	144.8
4	3.2	2.4	64	51.4	38.1	124	99.6	73.9	184	147.8	109.6	244	196.0	145.4
5	4.0	3.0	65	52.2	38.7	125	100.4	74.5	185	148.6	110.2	245	196.8	145.9
6	4.8	3.6	66	53.0	39.3	126	101.2	75.1	186	149.4	110.8	246	197.6	146.5
7	5.6	4.2	67	53.8	39.9	127	102.0	75.7	187	150.2	111.4	247	198.4	147.1
8	6.4	4.8	68	54.6	40.5	128	102.8	76.2	188	151.0	112.0	248	199.2	147.7
9	7.2	5.4	69	55.4	41.1	129	103.6	76.8	189	151.8	112.6	249	200.0	148.3
10	8.0	6.0	70	56.2	41.7	130	104.4	77.4	190	152.6	113.2	250	200.8	148.9
11	8.8	6.6	71	57.0	42.3	131	105.2	78.0	191	153.4	113.8	251	201.6	149.5
12	9.6	7.1	72	57.8	42.9	132	106.0	78.6	192	154.2	114.4	252	202.4	150.1
13	10.4	7.7	73	58.6	43.5	133	106.8	79.2	193	155.0	115.0	253	203.2	150.7
14	11.2	8.3	74	59.4	44.1	134	107.6	79.8	194	155.8	115.6	254	204.0	151.3
15	12.0	8.9	75	60.2	44.7	135	108.4	80.4	195	156.6	116.2	255	204.8	151.9
16	12.9	9.5	76	61.0	45.3	136	109.2	81.0	196	157.4	116.8	256	205.6	152.5
17	13.7	10.1	77	61.8	45.9	137	110.0	81.6	197	158.2	117.4	257	206.4	153.1
18	14.5	10.7	78	62.7	46.5	138	110.8	82.2	198	159.0	117.9	258	207.2	153.7
19	15.3	11.3	79	63.5	47.1	139	111.6	82.8	199	159.8	118.5	259	208.0	154.3
20	16.1	11.9	80	64.3	47.7	140	112.4	83.4	200	160.6	119.1	260	208.8	154.9
21	16.9	12.5	81	65.1	48.3	141	113.3	84.0	201	161.4	119.7	261	209.6	155.5
22	17.7	13.1	82	65.9	48.8	142	114.1	84.6	202	162.2	120.3	262	210.4	156.1
23	18.5	13.7	83	66.7	49.4	143	114.9	85.2	203	163.1	120.9	263	211.2	156.7
24	19.3	14.3	84	67.5	50.0	144	115.7	85.8	204	163.9	121.5	264	212.0	157.3
25	20.1	14.9	85	68.3	50.6	145	116.5	86.4	205	164.7	122.1	265	212.8	157.9
26	20.9	15.5	86	69.1	51.2	146	117.3	87.0	206	165.5	122.7	266	213.7	158.5
27	21.7	16.1	87	69.9	51.8	147	118.1	87.6	207	166.3	123.3	267	214.5	159.1
28	22.5	16.7	88	70.7	52.4	148	118.9	88.2	208	167.1	123.9	268	215.3	159.6
29	23.3	17.3	89	71.5	53.0	149	119.7	88.8	209	167.9	124.5	269	216.1	160.2
30	24.1	17.9	90	72.3	53.6	150	120.5	89.4	210	168.7	125.1	270	216.9	160.8
31	24.9	18.5	91	73.1	54.2	151	121.3	90.0	211	169.5	125.7	271	217.7	161.4
32	25.7	19.1	92	73.9	54.8	152	122.1	90.5	212	170.3	126.3	272	218.5	162.0
33	26.5	19.7	93	74.7	55.4	153	122.9	91.1	213	171.1	126.9	273	219.3	162.6
34	27.3	20.3	94	75.5	56.0	154	123.7	91.7	214	171.9	127.5	274	220.1	163.2
35	28.1	20.8	95	76.3	56.6	155	124.5	92.3	215	172.7	128.1	275	220.9	163.8
36	28.9	21.4	96	77.1	57.2	156	125.3	92.9	216	173.5	128.7	276	221.7	164.4
37	29.7	22.0	97	77.9	57.8	157	126.1	93.5	217	174.3	129.3	277	222.5	165.0
38	30.5	22.6	98	78.7	58.4	158	126.9	94.1	218	175.1	129.9	278	223.3	165.6
39	31.3	23.2	99	79.5	59.0	159	127.7	94.7	219	175.9	130.5	279	224.1	166.2
40	32.1	23.8	100	80.3	59.6	160	128.5	95.3	220	176.7	131.1	280	224.9	166.8
41	32.9	24.4	101	81.1	60.2	161	129.3	95.9	221	177.5	131.6	281	225.7	167.4
42	33.7	25.0	102	81.9	60.8	162	130.1	96.5	222	178.3	132.2	282	226.5	168.0
43	34.5	25.6	103	82.7	61.4	163	130.9	97.1	223	179.1	132.8	283	227.3	168.6
44	35.3	26.2	104	83.5	62.0	164	131.7	97.7	224	179.9	133.4	284	228.1	169.2
45	36.1	26.8	105	84.3	62.5	165	132.5	98.3	225	180.7	134.0	285	228.9	169.8
46	36.9	27.4	106	85.1	63.1	166	133.3	98.9	226	181.5	134.6	286	229.7	170.4
47	37.8	28.0	107	85.9	63.7	167	134.1	99.5	227	182.3	135.2	287	230.5	171.0
48	38.6	28.6	108	86.7	64.3	168	134.9	100.1	228	183.1	135.8	288	231.3	171.6
49	39.4	29.2	109	87.5	64.9	169	135.7	100.7	229	183.9	136.4	289	232.1	172.2
50	40.2	29.8	110	88.4	65.5	170	136.5	101.3	230	184.7	137.0	290	232.9	172.8
51	41.0	30.4	111	89.2	66.1	171	137.3	101.9	231	185.5	137.6	291	233.7	173.3
52	41.8	31.0	112	90.0	66.7	172	138.2	102.5	232	186.3	138.2	292	234.5	173.9
53	42.6	31.6	113	90.8	67.3	173	139.0	103.1	233	187.1	138.8	293	235.3	174.5
54	43.4	32.2	114	91.6	67.9	174	139.8	103.7	234	188.0	139.4	294	236.1	175.1
55	44.2	32.8	115	92.4	68.5	175	140.6	104.2	235	188.8	140.0	295	236.9	175.7
56	45.0	33.4	116	93.2	69.1	176	141.4	104.8	236	189.6	140.6	296	237.7	176.3
57	45.8	34.0	117	94.0	69.7	177	142.2	105.4	237	190.4	141.2	297	238.6	176.9
58	46.6	34.6	118	94.8	70.3	178	143.0	106.0	238	191.2	141.8	298	239.4	177.5
59	47.4	35.1	119	95.6	70.9	179	143.8	106.6	239	192.0	142.4	299	240.2	178.1
60	48.2	35.7	120	96.4	71.5	180	144.6	107.2	240	192.8	143.0	300	241.0	178.7

Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

N. E. ¾ E.　　　**S. E. ¾ E.**　　　**N. W. ¾ W.**　　　**S. W. ¾ W.**　　　[For 4¾ Points.

TABLE VIII. 75

Difference of Latitude and Departure for 3½ Points.

N. E. ¼ N. N. W. ½ N. S. E. ¼ S. S. W. ¼ S.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	47.2	38.7	121	93.5	76.8	181	139.9	114.8	241	186.3	152.9
2	1.5	1.3	62	47.9	39.3	122	94.3	77.4	182	140.7	115.5	242	187.1	153.5
3	2.3	1.9	63	48.7	40.0	123	95.1	78.0	183	141.5	116.1	243	187.8	154.2
4	3.1	2.5	64	49.5	40.6	124	95.9	78.7	184	142.2	116.7	244	188.6	154.8
5	3.9	3.2	65	50.2	41.2	125	96.6	79.3	185	143.0	117.4	245	189.4	155.4
6	4.6	3.8	66	51.0	41.9	126	97.4	79.9	186	143.8	118.0	246	190.2	156.1
7	5.4	4.4	67	51.8	42.5	127	98.2	80.6	187	144.6	118.6	247	190.9	156.7
8	6.2	5.1	68	52.6	43.1	128	98.9	81.2	188	145.3	119.3	248	191.7	157.3
9	7.0	5.7	69	53.3	43.8	129	99.7	81.8	189	146.1	119.9	249	192.5	158.0
10	7.7	6.3	70	54.1	44.4	130	100.5	82.5	190	146.9	120.5	250	193.3	158.6
11	8.5	7.0	71	54.9	45.0	131	101.3	83.1	191	147.6	121.2	251	194.0	159.2
12	9.3	7.6	72	55.7	45.7	132	102.0	83.7	192	148.4	121.8	252	194.8	159.9
13	10.0	8.2	73	56.4	46.3	133	102.8	84.4	193	149.2	122.4	253	195.6	160.5
14	10.8	8.9	74	57.2	46.9	134	103.6	85.0	194	150.0	123.1	254	196.3	161.1
15	11.6	9.5	75	58.0	47.6	135	104.4	85.6	195	150.7	123.7	255	197.1	161.8
16	12.4	10.2	76	58.7	48.2	136	105.1	86.3	196	151.5	124.3	256	197.9	162.4
17	13.1	10.8	77	59.5	48.8	137	105.9	86.9	197	152.3	125.0	257	198.7	163.0
18	13.9	11.4	78	60.3	49.5	138	106.7	87.5	198	153.1	125.6	258	199.4	163.7
19	14.7	12.1	79	61.1	50.1	139	107.4	88.2	199	153.8	126.2	259	200.2	164.3
20	15.5	12.7	80	61.8	50.8	140	108.2	88.8	200	154.6	126.9	260	201.0	164.9
21	16.2	13.3	81	62.6	51.4	141	109.0	89.4	201	155.4	127.5	261	201.8	165.6
22	17.0	14.0	82	63.4	52.0	142	109.8	90.1	202	156.1	128.1	262	202.5	166.2
23	17.8	14.6	83	64.2	52.7	143	110.5	90.7	203	156.9	128.8	263	203.3	166.8
24	18.6	15.2	84	64.9	53.3	144	111.3	91.4	204	157.7	129.4	264	204.1	167.5
25	19.3	15.9	85	65.7	53.9	145	112.1	92.0	205	158.5	130.1	265	204.8	168.1
26	20.1	16.5	86	66.5	54.6	146	112.9	92.6	206	159.2	130.7	266	205.6	168.7
27	20.9	17.1	87	67.3	55.2	147	113.6	93.3	207	160.0	131.3	267	206.4	169.4
28	21.6	17.8	88	68.0	55.8	148	114.4	93.9	208	160.8	132.0	268	207.2	170.0
29	22.4	18.4	89	68.8	56.5	149	115.2	94.5	209	161.6	132.6	269	207.9	170.7
30	23.2	19.0	90	69.6	57.1	150	116.0	95.2	210	162.3	133.2	270	208.7	171.3
31	24.0	19.7	91	70.3	57.7	151	116.7	95.8	211	163.1	133.9	271	209.5	171.9
32	24.7	20.3	92	71.1	58.4	152	117.5	96.4	212	163.9	134.5	272	210.3	172.6
33	25.5	20.9	93	71.9	59.0	153	118.3	97.1	213	164.7	135.1	273	211.0	173.2
34	26.3	21.6	94	72.7	59.6	154	119.0	97.7	214	165.4	135.8	274	211.8	173.8
35	27.1	22.2	95	73.4	60.3	155	119.8	98.3	215	166.2	136.4	275	212.6	174.5
36	27.8	22.8	96	74.2	60.9	156	120.6	99.0	216	167.0	137.0	276	213.4	175.1
37	28.6	23.5	97	75.0	61.5	157	121.4	99.6	217	167.7	137.7	277	214.1	175.7
38	29.4	24.1	98	75.8	62.2	158	122.1	100.2	218	168.5	138.3	278	214.9	176.4
39	30.1	24.8	99	76.5	62.8	159	122.9	100.9	219	169.3	138.9	279	215.7	177.0
40	30.9	25.4	100	77.3	63.4	160	123.7	101.5	220	170.1	139.6	280	216.4	177.6
41	31.7	26.0	101	78.1	64.1	161	124.5	102.1	221	170.8	140.2	281	217.2	178.3
42	32.5	26.6	102	78.8	64.7	162	125.2	102.8	222	171.6	140.8	282	218.0	178.9
43	33.2	27.3	103	79.6	65.3	163	126.0	103.4	223	172.4	141.5	283	218.8	179.5
44	34.0	27.9	104	80.4	66.0	164	126.8	104.0	224	173.2	142.1	284	219.5	180.2
45	34.8	28.5	105	81.2	66.6	165	127.5	104.7	225	173.9	142.7	285	220.3	180.8
46	35.6	29.2	106	81.9	67.2	166	128.3	105.3	226	174.7	143.4	286	221.1	181.4
47	36.3	29.8	107	82.7	67.9	167	129.1	105.9	227	175.5	144.0	287	221.9	182.1
48	37.1	30.5	108	83.5	68.5	168	129.9	106.6	228	176.2	144.6	288	222.6	182.7
49	37.9	31.1	109	84.3	69.1	169	130.6	107.2	229	177.0	145.3	289	223.4	183.3
50	38.7	31.7	110	85.0	69.8	170	131.4	107.8	230	177.8	145.9	290	224.2	184.0
51	39.4	32.4	111	85.8	70.4	171	132.2	108.5	231	178.6	146.5	291	224.9	184.6
52	40.2	33.0	112	86.6	71.1	172	133.0	109.1	232	179.3	147.2	292	225.7	185.2
53	41.0	33.6	113	87.4	71.7	173	133.7	109.8	233	180.1	147.8	293	226.5	185.9
54	41.7	34.3	114	88.1	72.3	174	134.5	110.4	234	180.9	148.4	294	227.3	186.5
55	42.5	34.9	115	88.9	73.0	175	135.3	111.0	235	181.7	149.1	295	228.0	187.1
56	43.3	35.5	116	89.7	73.6	176	136.0	111.7	236	182.4	149.7	296	228.8	187.8
57	44.1	36.2	117	90.4	74.2	177	136.8	112.3	237	183.2	150.4	297	229.6	188.4
58	44.8	36.8	118	91.2	74.9	178	137.6	112.9	238	184.0	151.0	298	230.4	189.0
59	45.6	37.4	119	92.0	75.5	179	138.4	113.6	239	184.7	151.6	299	231.1	189.7
60	46.4	38.1	120	92.8	76.1	180	139.1	114.2	240	185.5	152.3	300	231.9	190.3
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE VIII.

Difference of Latitude and Departure for 3¾ Points.

N. E. ¼ N. N. W. ¼ N. S. E. ¼ S. S. W. ¼ S.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.7	0.7	61	45.2	41.0	121	89.7	81.3	181	134.1	121.6	241	178.6	161.8
2	1.5	1.3	62	45.9	41.6	122	90.4	81.9	182	134.9	122.2	242	179.3	162.5
3	2.2	2.0	63	46.7	42.3	123	91.1	82.6	183	135.6	122.9	243	180.1	163.2
4	3.0	2.7	64	47.4	43.0	124	91.9	83.3	184	136.3	123.6	244	180.8	163.9
5	3.7	3.4	65	48.2	43.7	125	92.6	83.9	185	137.1	124.2	245	181.5	164.5
6	4.4	4.0	66	48.9	44.3	126	93.4	84.6	186	137.8	124.9	246	182.3	165.2
7	5.2	4.7	67	49.6	45.0	127	94.1	85.3	187	138.6	125.6	247	183.0	165.9
8	5.9	5.4	68	50.4	45.7	128	94.8	86.0	188	139.3	126.3	248	183.8	166.5
9	6.7	6.0	69	51.1	46.3	129	95.6	86.6	189	140.0	126.9	249	184.5	167.2
10	7.4	6.7	70	51.9	47.0	130	96.3	87.3	190	140.8	127.6	250	185.2	167.9
11	8.2	7.4	71	52.6	47.7	131	97.1	88.0	191	141.5	128.3	251	186.0	168.6
12	8.9	8.1	72	53.3	48.4	132	97.8	88.6	192	142.8	128.9	252	186.7	169.2
13	9.6	8.7	73	54.1	49.0	133	98.5	89.3	193	143.0	129.6	253	187.5	169.9
14	10.4	9.4	74	54.8	49.7	134	99.3	90.0	194	143.7	130.3	254	188.2	170.6
15	11.1	10.1	75	55.6	50.4	135	100.0	90.7	195	144.5	131.0	255	188.9	171.2
16	11.9	10.7	76	56.3	51.0	136	100.8	91.3	196	145.2	131.6	256	189.7	171.9
17	12.6	11.4	77	57.1	51.7	137	101.5	92.0	197	146.0	132.3	257	190.4	172.6
18	13.3	12.1	78	57.8	52.4	138	102.3	92.7	198	146.7	133.0	258	191.2	173.3
19	14.1	12.8	79	58.5	53.1	139	103.0	93.3	199	147.4	133.6	259	191.9	173.9
20	14.8	13.4	80	59.3	53.7	140	103.7	94.0	200	148.2	134.3	260	192.6	174.6
21	15.6	14.1	81	60.0	54.4	141	104.5	94.7	201	148.9	135.0	261	193.4	175.3
22	16.3	14.8	82	60.8	55.1	142	105.2	95.4	202	149.7	135.7	262	194.1	175.9
23	17.0	15.4	83	61.5	55.7	143	106.0	96.0	203	150.4	136.3	263	194.9	176.6
24	17.8	16.1	84	62.2	56.4	144	106.7	96.7	204	151.2	137.0	264	195.6	177.3
25	18.5	16.8	85	63.0	57.1	145	107.4	97.4	205	151.9	137.7	265	196.4	178.0
26	19.3	17.5	86	63.7	57.8	146	108.2	98.0	206	152.6	138.3	266	197.1	178.6
27	20.0	18.1	87	64.5	58.4	147	108.9	98.7	207	153.4	139.0	267	197.8	179.3
28	20.7	18.8	88	65.2	59.1	148	109.7	99.4	208	154.1	139.7	268	198.6	180.0
29	21.5	19.5	89	65.9	59.8	149	110.4	100.1	209	154.9	140.4	269	199.3	180.6
30	22.2	20.1	90	66.7	60.4	150	111.1	100.7	210	155.6	141.0	270	200.1	181.3
31	23.0	20.8	91	67.4	61.1	151	111.9	101.4	211	156.3	141.7	271	200.8	182.0
32	23.7	21.5	92	68.2	61.8	152	112.6	102.1	212	157.1	142.4	272	201.5	182.7
33	24.5	22.2	93	68.9	62.5	153	113.4	102.7	213	157.8	143.0	273	202.3	183.3
34	25.2	22.8	94	69.6	63.1	154	114.1	103.4	214	158.6	143.7	274	203.0	184.0
35	25.9	23.5	95	70.4	63.8	155	114.8	104.1	215	159.3	144.4	275	203.8	184.7
36	26.7	24.2	96	71.1	64.5	156	115.6	104.8	216	160.0	145.1	276	204.5	185.4
37	27.4	24.8	97	71.9	65.1	157	116.3	105.4	217	160.8	145.7	277	205.2	186.0
38	28.2	25.5	98	72.6	65.8	158	117.1	106.1	218	161.5	146.4	278	206.0	186.7
39	28.9	26.2	99	73.4	66.5	159	117.8	106.8	219	162.3	147.1	279	206.7	187.4
40	29.6	26.9	100	74.1	67.2	160	118.6	107.4	220	163.0	147.7	280	207.5	188.0
41	30.4	27.5	101	74.8	67.8	161	119.3	108.1	221	163.8	148.4	281	208.2	188.7
42	31.1	28.2	102	75.6	68.5	162	120.0	108.8	222	164.5	149.1	282	208.9	189.4
43	31.9	28.9	103	76.3	69.2	163	120.8	109.5	223	165.2	149.8	283	209.7	190.1
44	32.6	29.5	104	77.1	69.8	164	121.5	110.1	224	166.0	150.4	284	210.4	190.7
45	33.3	30.2	105	77.8	70.5	165	122.3	110.8	225	166.7	151.1	285	211.2	191.4
46	34.1	30.9	106	78.5	71.2	166	123.0	111.5	226	167.5	151.8	286	211.9	192.1
47	34.8	31.6	107	79.3	71.9	167	123.7	112.2	227	168.2	152.4	287	212.7	192.7
48	35.6	32.2	108	80.0	72.5	168	124.5	112.8	228	168.9	153.1	288	213.4	193.4
49	36.3	32.9	109	80.8	73.2	169	125.2	113.5	229	169.7	153.8	289	214.1	194.1
50	37.0	33.6	110	81.5	73.9	170	126.0	114.2	230	170.4	154.5	290	214.9	194.8
51	37.8	34.2	111	82.2	74.5	171	126.7	114.8	231	171.2	155.1	291	215.6	195.4
52	38.5	34.9	112	83.0	75.2	172	127.4	115.5	232	171.9	155.8	292	216.4	196.1
53	39.3	35.6	113	83.7	75.9	173	128.2	116.2	233	172.6	156.5	293	217.1	196.8
54	40.0	36.3	114	84.5	76.6	174	128.9	116.9	234	173.4	157.1	294	217.8	197.4
55	40.8	36.9	115	85.2	77.2	175	129.7	117.5	235	174.1	157.8	295	218.6	198.1
56	41.5	37.6	116	86.0	77.9	176	130.4	118.2	236	174.9	158.5	296	219.3	198.8
57	42.2	38.3	117	86.7	78.6	177	131.1	118.9	237	175.6	159.2	297	220.1	199.5
58	43.0	39.0	118	87.4	79.2	178	131.9	119.5	238	176.3	159.8	298	220.8	200.1
59	43.7	39.6	119	88.2	79.9	179	132.6	120.2	239	177.1	160.5	299	221.5	200.8
60	44.5	40.3	120	88.9	80.6	180	133.4	120.9	240	177.8	161.2	300	222.3	201.5
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

N. E. ¼ E. S. E. ¼ E. N. W. ¼ W. S. W. ¼ W. [For 4¼ Points.

TABLE VIII.
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Difference of Latitude and Departure for 4 Points.

	N. E.			N. W.			S. E.			S. W.	
Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.7	0.7	61	43.1	43.1	121	85.6	85.6	181	128.0	128.0	241	170.4	170.4
2	1.4	1.4	62	43.8	43.8	122	86.3	86.3	182	128.7	128.7	242	171.1	171.1
3	2.1	2.1	63	44.5	44.5	123	87.0	87.0	183	129.4	129.4	243	171.8	171.8
4	2.8	2.8	64	45.3	45.3	124	87.7	87.7	184	130.1	130.1	244	172.5	172.5
5	3.5	3.5	65	46.0	46.0	125	88.4	88.4	185	130.8	130.8	245	173.2	173.2
6	4.2	4.2	66	46.7	46.7	126	89.1	89.1	186	131.5	131.5	246	173.9	173.9
7	4.9	4.9	67	47.4	47.4	127	89.8	89.8	187	132.2	132.2	247	174.7	174.7
8	5.7	5.7	68	48.1	48.1	128	90.5	90.5	188	132.9	132.9	248	175.4	175.4
9	6.4	6.4	69	48.8	48.8	129	91.2	91.2	189	133.6	133.6	249	176.1	176.1
10	7.1	7.1	70	49.5	49.5	130	91.9	91.9	190	134.4	134.4	250	176.8	176.8
11	7.8	7.8	71	50.2	50.2	131	92.6	92.6	191	135.1	135.1	251	177.5	177.5
12	8.5	8.5	72	50.9	50.9	132	93.3	93.3	192	135.8	135.8	252	178.2	178.2
13	9.2	9.2	73	51.6	51.6	133	94.0	94.0	193	136.5	136.5	253	178.9	178.9
14	9.9	9.9	74	52.3	52.3	134	94.8	94.8	194	137.2	137.2	254	179.6	179.6
15	10.6	10.6	75	53.0	53.0	135	95.5	95.5	195	137.9	137.9	255	180.3	180.3
16	11.3	11.3	76	53.7	53.7	136	96.2	96.2	196	138.6	138.6	256	181.0	181.0
17	12.0	12.0	77	54.4	54.4	137	96.9	96.9	197	139.3	139.3	257	181.7	181.7
18	12.7	12.7	78	55.2	55.2	138	97.6	97.6	198	140.0	140.0	258	182.4	182.4
19	13.4	13.4	79	55.9	55.9	139	98.3	98.3	199	140.7	140.7	259	183.1	183.1
20	14.1	14.1	80	56.6	56.6	140	99.0	99.0	200	141.4	141.4	260	183.8	183.8
21	14.8	14.8	81	57.3	57.3	141	99.7	99.7	201	142.1	142.1	261	184.6	184.6
22	15.6	15.6	82	58.0	58.0	142	100.4	100.4	202	142.8	142.8	262	185.3	185.3
23	16.3	16.3	83	58.7	58.7	143	101.1	101.1	203	143.5	143.5	263	186.0	186.0
24	17.0	17.0	84	59.4	59.4	144	101.8	101.8	204	144.2	144.2	264	186.7	186.7
25	17.7	17.7	85	60.1	60.1	145	102.5	102.5	205	145.0	145.0	265	187.4	187.4
26	18.4	18.4	86	60.8	60.8	146	103.2	103.2	206	145.7	145.7	266	188.1	188.1
27	19.1	19.1	87	61.5	61.5	147	103.9	103.9	207	146.4	146.4	267	188.8	188.8
28	19.8	19.8	88	62.2	62.2	148	104.7	104.7	208	147.1	147.1	268	189.5	189.5
29	20.5	20.5	89	62.9	62.9	149	105.4	105.4	209	147.8	147.8	269	190.2	190.2
30	21.2	21.2	90	63.6	63.6	150	106.1	106.1	210	148.5	148.5	270	190.9	190.9
31	21.9	21.9	91	64.3	64.3	151	106.8	106.8	211	149.2	149.2	271	191.6	191.6
32	22.6	22.6	92	65.1	65.1	152	107.5	107.5	212	149.9	149.9	272	192.3	192.3
33	23.3	23.3	93	65.8	65.8	153	108.2	108.2	213	150.6	150.6	273	193.0	193.0
34	24.0	24.0	94	66.5	66.5	154	108.9	108.9	214	151.3	151.3	274	193.7	193.7
35	24.7	24.7	95	67.2	67.2	155	109.6	109.6	215	152.0	152.0	275	194.5	194.5
36	25.5	25.5	96	67.9	67.9	156	110.3	110.3	216	152.7	152.7	276	195.2	195.2
37	26.2	26.2	97	68.6	68.6	157	111.0	111.0	217	153.4	153.4	277	195.9	195.9
38	26.9	26.9	98	69.3	69.3	158	111.7	111.7	218	154.1	154.1	278	196.6	196.6
39	27.6	27.6	99	70.0	70.0	159	112.4	112.4	219	154.9	154.9	279	197.3	197.3
40	28 3	28.3	100	70.7	70.7	160	113.1	113.1	220	155.6	155.6	280	198.0	198.0
41	29.0	29.0	101	71.4	71.4	161	113.8	113.8	221	156.3	156.3	281	198.7	198.7
42	29.7	29.7	102	72.1	72.1	162	114.6	114.6	222	157.0	157.0	282	199.4	199.4
43	30.4	30.4	103	72.8	72.8	163	115.3	115.3	223	157.7	157.7	283	200.1	200.1
44	31.1	31.1	104	73.5	73.5	164	116.0	116.0	224	158.4	158.4	284	200.8	200.8
45	31.8	31.8	105	74.2	74.2	165	116.7	116.7	225	159.1	159.1	285	201.5	201.5
46	32.5	32.5	106	75.0	75.0	166	117.4	117.4	226	159.8	159.8	286	202.2	202.2
47	33.2	33.2	107	75.7	75.7	167	118.1	118.1	227	160.5	160.5	287	202.9	202.9
48	33.9	33.9	108	76.4	76.4	168	118.8	118.8	228	161.2	161.2	288	203.6	203.6
49	34.6	34.6	109	77.1	77.1	169	119.5	119.5	229	161.9	161.9	289	204.4	204.4
50	35.4	35.4	110	77.8	77.8	170	120.2	120.2	230	162.6	162.6	290	205.1	205.1
51	36.1	36.1	111	78.5	78.5	171	120.9	120.9	231	163.3	163.3	291	205.8	205.8
52	36.8	36.8	112	79.2	79.2	172	121.6	121.6	232	164.0	164.0	292	206.5	206.5
53	37.5	37.5	113	79.9	79.9	173	122.3	122.3	233	164.8	164.8	293	207.2	207.2
54	38.2	38.2	114	80.6	80.6	174	123.0	123.0	234	165.5	165.5	294	207.9	207.9
55	38.9	38.9	115	81.3	81.3	175	123.7	123.7	235	166.2	166.2	295	208.6	208.6
56	39.6	39.6	116	82.0	82.0	176	124.5	124.5	236	166.9	166.9	296	209.3	209.3
57	40.3	40.3	117	82.7	82.7	177	125.2	125.2	237	167.6	167.6	297	210.0	210.0
58	41.0	41.0	118	83.4	83.4	178	125.9	125.9	238	168.3	168.3	298	210.7	210.7
59	41.7	41.7	119	84.1	84.1	179	126.6	126.6	239	169.0	169.0	299	211.4	211.4
60	42.4	42.4	120	84.9	84.9	180	127.3	127.3	240	169.7	169.7	300	212.1	212.1
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 1 Degree.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.0	61	61.0	1.1	121	121.0	2.1	181	181.0	3.2	241	241.0	4.2
2	2.0	0.0	62	62.0	1.1	122	122.0	2.1	182	182.0	3.2	242	242.0	4.2
3	3.0	0.1	63	63.0	1.1	123	123.0	2.1	183	183.0	3.2	243	243.0	4.2
4	4.0	0.1	64	64.0	1.1	124	124.0	2.2	184	184.0	3.2	244	244.0	4.3
5	5.0	0.1	65	65.0	1.1	125	125.0	2.2	185	185.0	3.2	245	245.0	4.3
6	6.0	0.1	66	66.0	1.2	126	126.0	2.2	186	186.0	3.2	246	246.0	4.3
7	7.0	0.1	67	67.0	1.2	127	127.0	2.2	187	187.0	3.3	247	247.0	4.3
8	8.0	0.1	68	68.0	1.2	128	128.0	2.2	188	188.0	3.3	248	248.0	4.3
9	9.0	0.2	69	69.0	1.2	129	129.0	2.3	189	189.0	3.3	249	249.0	4.3
10	10.0	0.2	70	70.0	1.2	130	130.0	2.3	190	190.0	3.3	250	250.0	4.4
11	11.0	0.2	71	71.0	1.2	131	131.0	2.3	191	191.0	3.3	251	251.0	4.4
12	12.0	0.2	72	72.0	1.3	132	132.0	2.3	192	192.0	3.4	252	252.0	4.4
13	13.0	0.2	73	73.0	1.3	133	133.0	2.3	193	193.0	3.4	253	253.0	4.4
14	14.0	0.2	74	74.0	1.3	134	134.0	2.3	194	194.0	3.4	254	254.0	4.4
15	15.0	0.3	75	75.0	1.3	135	155.0	2.4	195	195.0	3.4	255	255.0	4.5
16	16.0	0.3	76	76.0	1.3	136	136.0	2.4	196	196.0	3.4	256	256.0	4.5
17	17.0	0.3	77	77.0	1.3	137	137.0	2.4	197	197.0	3.4	257	257.0	4.5
18	18.0	0.3	78	78.0	1.4	138	138.0	2.4	198	198.0	3.5	258	258.0	4.5
19	19.0	0.3	79	79.0	1.4	139	139.0	2.4	199	199.0	3.5	259	259.0	4.5
20	20.0	0.3	80	80.0	1.4	140	140.0	2.4	200	200.0	3.5	260	260.0	4.5
21	21.0	0.4	81	81.0	1.4	141	141.0	2.5	201	201.0	3.5	261	261.0	4.6
22	22.0	0.4	82	82.0	1.4	142	142.0	2.5	202	202.0	3.5	262	262.0	4.6
23	23.0	0.4	83	83.0	1.4	143	143.0	2.5	203	203.0	3.5	263	263.0	4.6
24	24.0	0.4	84	84.0	1.5	144	144.0	2.5	204	204.0	3.6	264	264.0	4.6
25	25.0	0.4	85	85.0	1.5	145	145.0	2.5	205	205.0	3.6	265	265.0	4.6
26	26.0	0.5	86	86.0	1.5	146	146.0	2.5	206	206.0	3.6	266	266.0	4.6
27	27.0	0.5	87	87.0	1.5	147	147.0	2.6	207	207.0	3.6	267	267.0	4.7
28	28.0	0.5	88	88.0	1.5	148	148.0	2.6	208	208.0	3.6	268	268.0	4.7
29	29.0	0.5	89	89.0	1.6	149	149.0	2.6	209	209.0	3.6	269	269.0	4.7
30	30.0	0.5	90	90.0	1.6	150	150.0	2.6	210	210.0	3.7	270	270.0	4.7
31	31.0	0.5	91	91.0	1.6	151	151.0	2.6	211	211.0	3.7	271	271.0	4.7
32	32.0	0.6	92	92.0	1.6	152	152.0	2.7	212	212.0	3.7	272	272.0	4.7
33	33.0	0.6	93	93.0	1.6	153	153.0	2.7	213	213.0	3.7	273	273.0	4.8
34	34.0	0.6	94	94.0	1.6	154	154.0	2.7	214	214.0	3.7	274	274.0	4.8
35	35.0	0.6	95	95.0	1.7	155	155.0	2.7	215	215.0	3.8	275	275.0	4.8
36	36.0	0.6	96	96.0	1.7	156	156.0	2.7	216	216.0	3.8	276	276.0	4.8
37	37.0	0.6	97	97.0	1.7	157	157.0	2.7	217	217.0	3.8	277	277.0	4.8
38	38.0	0.7	98	98.0	1.7	158	158.0	2.8	218	218.0	3.8	278	278.0	4.9
39	39.0	0.7	99	99.0	1.7	159	159.0	2.8	219	219.0	3.8	279	279.0	4.9
40	40.0	0.7	100	100.0	1.7	160	160.0	2.8	220	220.0	3.8	280	280.0	4.9
41	41.0	0.7	101	101.0	1.8	161	161.0	2.8	221	221.0	3.9	281	281.0	4.9
42	42.0	0.7	102	102.0	1.8	162	162.0	2.8	222	222.0	3.9	282	282.0	4.9
43	43.0	0.8	103	103.0	1.8	163	163.0	2.8	223	223.0	3.9	283	283.0	4.9
44	44.0	0.8	104	104.0	1.8	164	164.0	2.9	224	224.0	3.9	284	284.0	5.0
45	45.0	0.8	105	105.0	1.8	165	165.0	2.9	225	225.0	3.9	285	285.0	5.0
46	46.0	0.8	106	106.0	1.8	166	166.0	2.9	226	226.0	3.9	286	286.0	5.0
47	47.0	0.8	107	107.0	1.9	167	167.0	2.9	227	227.0	4.0	287	287.0	5.0
48	48.0	0 8	108	108.0	1.9	168	168.0	2.9	228	228.0	4.0	288	288.0	5.0
49	49.0	0.9	109	109.0	1.9	169	169.0	2.9	229	229.0	4.0	289	289.0	5.0
50	50.0	0.9	110	110.0	1.9	170	170.0	3.0	230	230.0	4.0	290	290.0	5.1
51	51.0	0.9	111	111.0	1.9	171	171.0	3.0	231	231.0	4.0	291	291.0	5.1
52	52.0	0.9	112	112.0	2.0	172	172.0	3.0	232	232.0	4.0	292	292.0	5.1
53	53.0	0.9	113	113.0	2.0	173	173.0	3.0	233	233.0	4.1	293	293.0	5.1
54	54.0	0.9	114	114.0	2.0	174	174.0	3.0	234	234.0	4.1	294	294.0	5.1
55	55.0	1.0	115	115.0	2.0	175	175.0	3.1	235	235.0	4.1	295	295.0	5.1
56	56.0	1.0	116	116.0	2.0	176	176.0	3.1	236	236.0	4.1	296	296.0	5.2
57	57.0	1.0	117	117.0	2.0	177	177.0	3.1	237	237.0	4.1	297	297.0	5.2
58	58.0	1.0	118	118.0	2.1	178	178.0	3.1	238	238.0	4.2	298	298.0	5.2
59	59.0	1.0	119	119.0	2.1	179	179.0	3.1	239	239.0	4.2	299	299.0	5.2
60	60.0	1.0	120	120.0	2.1	180	180.0	3.1	240	240.0	4.2	300	300.0	5.2
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 89 Degrees.

TABLE IX. 79

Difference of Latitude and Departure for 2 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.0	61	61.0	2.1	121	120.9	4.2	181	180.9	6.3	241	240.9	. 8.4
2	2.0	0.1	62	62.0	2.2	122	121.9	4.3	182	181.9	6.4	242	241.9	8.4
3	3.0	0.1	63	63.0	2.2	123	122.9	4.3	183	182.9	6.4	243	242.9	8.5
4	4.0	0.1	64	64.0	2.2	124	123.9	4.3	184	183.9	6.4	244	243.9	8.5
5	5.0	0.2	65	65.0	2.3	125	124.9	4.4	185	184.9	6.5	245	244.9	8.6
6	6.0	0.2	66	66.0	2.3	126	125.9	4.4	186	185.9	6.5	246	245.9	8.6
7	7.0	0.2	67	67.0	2.3	127	126.9	4.4	187	186.9	6.5	247	246.8	8.6
8	8.0	0.3	68	68.0	2.4	128	127.9	4.5	188	187.9	6.6	248	247.8	8.7
9	9.0	0.3	69	69.0	2.4	129	128.9	4.5	189	188.9	6.6	249	248.8	8.7
10	10.0	0.3	70	70.0	2.4	130	129.9	4.5	190	189.9	6.6	250	249.8	8.7
11	11.0	0.4	71	71.0	2.5	131	130.9	4.6	191	190.9	6.7	251	250.8	8.8
12	12.0	0.4	72	72.0	2.5	132	131.9	4.6	192	191.9	6.7	252	251.8	8.8
13	13.0	0.5	73	73.0	2.5	133	132.9	4.6	193	192.9	6.7	253	252.8	8.8
14	14.0	0.5	74	74.0	2.6	134	133.9	4.7	194	193.9	6.8	254	253.8	8.9
15	15.0	0.5	75	75.0	2.6	135	134.9	4.7	195	194.9	6.8	255	254.8	8.9
16	16.0	0.6	76	76.0	2.7	136	135.9	4.7	196	195.9	6.8	256	255.8	8.9
17	17.0	0.6	77	77.0	2.7	137	136.9	4 8	197	196.9	6.9	257	256.8	9.0
18	18.0	0.6	78	78.0	2.7	138	137.9	4.8	198	197.9	6.9	258	257.8	9.0
19	19.0	0.7	79	79.0	2.8	139	138.9	4.9	199	198.9	6.9	259	258.8	9.0
20	20.0	0.7	80	80.0	2.8	140	139.9	4.9	200	199.9	7.0	260	259.8	9.1
21	21.0	0.7	81	81.0	2.8	141	140.9	4.9	201	200.9	7.0	261	260.8	9.1
22	22.0	0.8	82	82.0	2.9	142	141.9	5.0	202	201.9	7.0	262	261.8	9.1
23	23.0	0.8	83	82.9	2.9	143	142.9	5.0	203	202.9	7.1	263	262.8	9.2
24	24.0	0.8	84	83.9	2.9	144	143.9	5.0	204	203.9	7.1	264	263.8	9.2
25	25.0	0.9	85	84.9	3.0	145	144.9	5.1	205	204.9	7.2	265	264.8	9.2
26	26.0	0.9	86	85.9	3.0	146	145.9	5.1	206	205.9	7.2	266	265.8	9.3
27	27.0	0.9	87	86.9	3.0	147	146.9	5.1	207	206.9	7.2	267	266.8	9.3
28	28.0	1.0	88	87.9	3.1	148	147.9	5.2	208	207.9	7.3	268	267.8	9.4
29	29.0	1.0	89	88.9	3.1	149	148.9	5.2	209	208.9	7.3	269	268.8	9.4
30	30.0	1.0	90	89.9	3.1	150	149.9	5.2	210	209.9	7.3	270	269.8	9.4
31	31.0	1.1	91	90.9	3.2	151	150.9	5.3	211	210.9	7.4	271	270.8	9.5
32	32.0	1.1	92	91.9	3.2	152	151.9	5.3	212	211.9	7.4	272	271.8	9.5
33	33.0	1.2	93	92.9	3.2	153	152.9	5.3	213	212.9	7.4	273	272.8	9.5
34	34.0	1.2	94	93.9	3.3	154	153.9	5.4	214	213.9	7.5	274	273.8	9.6
35	35.0	1.2	95	94.9	3.3	155	154.9	5.4	215	214.9	7.5	275	274.8	9.6
36	36.0	1.3	96	95.9	3.4	156	155.9	5.4	216	215.9	7.5	276	275.8	9.6
37	37.0	1.3	97	96.9	3.4	157	156.9	5.5	217	216.9	7.6	277	276.8	9.7
38	38.0	1.3	98	97.9	3.4	158	157.9	5.5	218	217.9	7.6	278	277.8	9.7
39	39.0	1.4	99	98.9	3.5	159	158.9	5.5	219	218.9	7.6	279	278 8	9.7
40	40.0	1.4	100	99.9	3.5	160	159.9	5.6	220	219.9	7.7	280	279.8	9.8
41	41.0	1.4	101	100.9	3.5	161	160.9	5.6	221	220.9	7.7	281	280.8	9.8
42	42.0	1.5	102	101.9	3.6	162	161.9	5.7	222	221.9	7.7	282	281.8	9.8
43	43.0	1.5	103	102.9	3.6	163	162.9	5.7	223	222.9	7.8	283	282.8	9.9
44	44.0	1.5	104	103.9	3.6	164	163.9	5.7	224	223.9	7.8	284	283.8	9.9
45	45.0	1.6	105	104.9	3.7	165	164.9	5.8	225	224.9	7.9	285	284.8	9.9
46	46.0	1.6	106	105.9	3.7	166	165.9	5.8	226	225.9	7.9	286	285.8	10.0
47	47.0	1.6	107	106.9	3.7	167	166.9	5.8	227	226.9	7.9	287	286.8	10.0
48	48.0	1.7	108	107.9	3.8	168	167.9	5.9	228	227.9	8.0	288	287.8	10.1
49	49.0	1.7	109	108.9	3.8	169	168.9	5.9	229	228.9	8.0	289	288.8	10.1
50	50.0	1.7	110	109.9	3.8	170	169.9	5.9	230	229.9	8.0	290	289.8	10.1
51	51.0	1.8	111	110.9	3.9	171	170.9	6.0	231	230.9	8.1	291	290.8	10.2
52	52.0	1.8	112	111.9	3.9	172	171.9	6.0	232	231.9	8.1	292	291.8	10.2
53	53.0	1.8	113	112.9	3.9	173	172.9	6.0	233	232.9	8.1	293	292.8	10.2
54	54.0	1.9	114	113.9	4.0	174	173.9	6.1	234	233.9	8.2	294	293.8	10.3
55	55.0	1.9	115	114.9	4.0	175	174.9	6.1	235	234.9	8.2	295	294.8	10.3
56	56.0	2.0	116	115.9	4.0	176	175.9	6.1	236	235.9	8.2	296	295.8	10.3
57	57.0	2.0	117	116.9	4.1	177	176.9	6.2	237	236.9	8.3	297	296.8	10.4
58	58.0	2.0	118	117.9	4.1	178	177.9	6.2	238	237.9	8.3	298	297.8	10.4
59	59.0	2.1	119	118.9	4.2	179	178.9	6.2	239	238.9	8.3	299	298.8	10.4
60	60.0	2.1	120	119.9	4.2	180	179.9	6.3	240	239.9	8.4	300	299.8	10.5
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 88 Degrees.

TABLE IX.

Difference of Latitude and Departure for 3 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.1	61	60.9	3.2	121	120.8	6.3	181	180.8	9.5	241	240.7	12.6
2	2.0	0.1	62	61.9	3.2	122	121.8	6.4	182	181.8	9.5	242	241.7	12.7
3	3.0	0.2	63	62.9	3.3	123	122.8	6.4	183	182.7	9.6	243	242.7	12.7
4	4.0	0.2	64	63.9	3.3	124	123.8	6.5	184	183.7	9.6	244	243.7	12.8
5	5.0	0.3	65	64.9	3.4	125	124.8	6.5	185	184.7	9.7	245	244.7	12.8
6	6.0	0.3	66	65.9	3.5	126	125.8	6.6	186	185.7	9.7	246	245.7	12.9
7	7.0	0.4	67	66.9	3.5	127	126.8	6.6	187	186.7	9.8	247	246.7	12.9
8	8.0	0.4	68	67.9	3.6	128	127.8	6.7	188	187.7	9.8	248	247.7	13.0
9	9.0	0.5	69	68.9	3.6	129	128.8	6.8	189	188.7	9.9	249	248.7	13.0
10	10.0	0.5	70	69.9	3.7	130	129.8	6.8	190	189.7	9.9	250	249.7	13.1
11	11.0	0.6	71	70.9	3.7	131	130.8	6.9	191	190.7	10.0	251	250.7	13.1
12	12.0	0.6	72	71.9	3.8	132	131.8	6.9	192	191.7	10.0	252	251.7	13.2
13	13.0	0.7	73	72.9	3.8	133	132.8	7.0	193	192.7	10.1	253	252.7	13.2
14	14.0	0.7	74	73.9	3.9	134	133.8	7.0	194	193.7	10.2	254	253.7	13.3
15	15.0	0.8	75	74.9	3.9	135	134.8	7.1	195	194.7	10.2	255	254.7	13.3
16	16.0	0.8	76	75.9	4.0	136	135.8	7.1	196	195.7	10.3	256	255.6	13.4
17	17.0	0.9	77	76.9	4.0	137	136.8	7.2	197	196.7	10.3	257	256.6	13.5
18	18.0	0.9	78	77.9	4.1	138	137.8	7.2	198	197.7	10.4	258	257.6	13.5
19	19.0	1.0	79	78.9	4.1	139	138.8	7.3	199	198.7	10.4	259	258.6	13.6
20	20.0	1.0	80	79.9	4.2	140	139.8	7.3	200	199.7	10.5	260	259.6	13.6
21	21.0	1.1	81	80.9	4.2	141	140.8	7.4	201	200.7	10.5	261	260.6	13.7
22	22.0	1.2	82	81.9	4.3	142	141.8	7.4	202	201.7	10.6	262	261.6	13.7
23	23.0	1.2	83	82.9	4.3	143	142.8	7.5	203	202.7	10.6	263	262.6	13.8
24	24.0	1.3	84	83.9	4.4	144	143.8	7.5	204	203.7	10.7	264	263.6	13.8
25	25.0	1.3	85	84.9	4.4	145	144.8	7.6	205	204.7	10.7	265	264.6	13.9
26	26.0	1.4	86	85.9	4.5	146	145.8	7.6	206	205.7	10.8	266	265.6	13.9
27	27.0	1.4	87	86.9	4.6	147	146.8	7.7	207	206.7	10.8	267	266.6	14.0
28	28.0	1.5	88	87.9	4.6	148	147.8	7.7	208	207.7	10.9	268	267.6	14.0
29	29.0	1.5	89	88.9	4.7	149	148.8	7.8	209	208.7	10.9	269	268.6	14.1
30	30.0	1.6	90	89.9	4.7	150	149.8	7.9	210	209.7	11.0	270	269.6	14.1
31	31.0	1.6	91	90.9	4.8	151	150.8	7.9	211	210.7	11.0	271	270.6	14.2
32	32.0	1.7	92	91.9	4.8	152	151.8	8.0	212	211.7	11.1	272	271.6	14.2
33	33.0	1.7	93	92.9	4.9	153	152.8	8.0	213	212.7	11.1	273	272.6	14.3
34	34.0	1.8	94	93.9	4.9	154	153.8	8.1	214	213.7	11.2	274	273.6	14.3
35	35.0	1.8	95	94.9	5.0	155	154.8	8.1	215	214.7	11.3	275	274.6	14.4
36	36.0	1.9	96	95.9	5.0	156	155.8	8.2	216	215.7	11.3	276	275.6	14.4
37	36.9	1.9	97	96.9	5.1	157	156.8	8.2	217	216.7	11.4	277	276.6	14.5
38	37.9	2.0	98	97.9	5.1	158	157.8	8.3	218	217.7	11.4	278	277.6	14.5
39	38.9	2.0	99	98.9	5.2	159	158.8	8.3	219	218.7	11.5	279	278.6	14.6
40	39.9	2.1	100	99.9	5.2	160	159.8	8.4	220	219.7	11.5	280	279.6	14.7
41	40.9	2.1	101	100.9	5.3	161	160.8	8.4	221	220.7	11.6	281	280.6	14.7
42	41.9	2.2	102	101.9	5.3	162	161.8	8.5	222	221.7	11.6	282	281.6	14.8
43	42.9	2.3	103	102.9	5.4	163	162.8	8.5	223	222.7	11.7	283	282.6	14.8
44	43.9	2.3	104	103.9	5.4	164	163.8	8.6	224	223.7	11.7	284	283.6	14.9
45	44.9	2.4	105	104.9	5.5	165	164.8	8.6	225	224.7	11.8	285	284.6	14.9
46	45.9	2.4	106	105.9	5.5	166	165.8	8.7	226	225.7	11.8	286	285.6	15.0
47	46.9	2.5	107	106.9	5.6	167	166.8	8.7	227	226.7	11.9	287	286.6	15.0
48	47.9	2.5	108	107.9	5.7	168	167.8	8.8	228	227.7	11.9	288	287.6	15.1
49	48.9	2.6	109	108.9	5.7	169	168.8	8.8	229	228.7	12.0	289	288.6	15.1
50	49.9	2.6	110	109.8	5.8	170	169.8	8.9	230	229.7	12.0	290	289.6	15.2
51	50.9	2.7	111	110.8	5.8	171	170.8	8.9	231	230.7	12.1	291	290.6	15.2
52	51.9	2.7	112	111.8	5.9	172	171.8	9.0	232	231.7	12.1	292	291.6	15.3
53	52.9	2.8	113	112.8	5.9	173	172.8	9.1	233	232.7	12.2	293	292.6	15.3
54	53.9	2.8	114	113.8	6.0	174	173.8	9.1	234	233.7	12.2	294	293.6	15.4
55	54.9	2.9	115	114.8	6.0	175	174.8	9.2	235	234.7	12.3	295	294.6	15.4
56	55.9	2.9	116	115.8	6.1	176	175.8	9.2	236	235.7	12.4	296	295.6	15.5
57	56.9	3.0	117	116.8	6.1	177	176.8	9.3	237	236.7	12.4	297	296.6	15.5
58	57.9	3.0	118	117.8	6.2	178	177.8	9.3	238	237.7	12.5	298	297.6	15.6
59	58.9	3.1	119	118.8	6.2	179	178.8	9.4	239	238.7	12.5	299	298.6	15.6
60	59.9	3.1	120	119.8	6.3	180	179.8	9.4	240	239.7	12.6	300	299.6	15.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 87 Degrees.

TABLE IX.   81

Difference of Latitude and Departure for 4 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.1	61	60.9	4.3	121	120.7	8.4	181	180.6	12.6	241	240.4	16.8
2	2.0	0.1	62	61.8	4.3	122	121.7	8.5	182	181.6	12.7	242	241.4	16.9
3	3.0	0.2	63	62.8	4.4	123	122.7	8.6	183	182.6	12.8	243	242.4	17.0
4	4.0	0.3	64	63.8	4.5	124	123.7	8.6	184	183.6	12.8	244	243.4	17.0
5	5.0	0.3	65	64.8	4.5	125	124.7	8.7	185	184.5	12.9	245	244.4	17.1
6	6.0	0.4	66	65.8	4.6	126	125.7	8.8	186	185.5	13.0	246	245.4	17.2
7	7.0	0.5	67	66.8	4.7	127	126.7	8.9	187	186.5	13.0	247	246.4	17.2
8	8.0	0.6	68	67.8	4.7	128	127.7	8.9	188	187.5	13.1	248	247.4	17.3
9	9.0	0.6	69	68.8	4.8	129	128.7	9.0	189	188.5	13.2	249	248.4	17.4
10	10.0	0.7	70	69.8	4.9	130	129.7	9.1	190	189.5	13.3	250	249.4	17.4
11	11.0	0.8	71	70.8	5.0	131	130.7	9.1	191	190.5	13.3	251	250.4	17.5
12	12.0	0.8	72	71.8	5.0	132	131.7	9.2	192	191.5	13.4	252	251.4	17.6
13	13.0	0.9	73	72.8	5.1	133	132.7	9.3	193	192.5	13.5	253	252.4	17.6
14	14.0	1.0	74	73.8	5.2	134	133.7	9.3	194	193.5	13.5	254	253.4	17.7
15	15.0	1.0	75	74.8	5.2	135	134.7	9.4	195	194.5	13.6	255	254.4	17.8
16	16.0	1.1	76	75.8	5.3	136	135.7	9.5	196	195.5	13.7	256	255.4	17.9
17	17.0	1.2	77	76.8	5.4	137	136.7	9.6	197	196.5	13.7	257	256.4	17.9
18	18.0	1.3	78	77.8	5.4	138	137.7	9.6	198	197.5	13.8	258	257.4	18.0
19	19.0	1.3	79	78.8	5.5	139	138.7	9.7	199	198.5	13.9	259	258.4	18.1
20	20.0	1.4	80	79.8	5.6	140	139.7	9.8	200	199.5	14.0	260	259.4	18.1
21	20.9	1.5	81	80.8	5.7	141	140.7	9.8	201	200.5	14.0	261	260.4	18.2
22	21.9	1.5	82	81.8	5.7	142	141.7	9.9	202	201.5	14.1	262	261.4	18.3
23	22.9	1.6	83	82.8	5.8	143	142.7	10.0	203	202.5	14.2	263	262.4	18.3
24	23.9	1.7	84	83.8	5.9	144	143.6	10.0	204	203.5	14.2	264	263.4	18.4
25	24.9	1.7	85	84.8	5.9	145	144.6	10.1	205	204.5	14.3	265	264.4	18.5
26	25.9	1.8	86	85.8	6.0	146	145.6	10.2	206	205.5	14.4	266	265.4	18.6
27	26.9	1.9	87	86.8	6.1	147	146.6	10.3	207	206.5	14.4	267	266.3	18.6
28	27.9	2.0	88	87.8	6.1	148	147.6	10.3	208	207.5	14.5	268	267.3	18.7
29	28.9	2.0	89	88.8	6.2	149	148.6	10.4	209	208.5	14.6	269	268.3	18.8
30	29.9	2.1	90	89.8	6.3	150	149.6	10.5	210	209.5	14.6	270	269.3	18.8
31	30.9	2.2	91	90.8	6.3	151	150.6	10.5	211	210.5	14.7	271	270.3	18.9
32	31.9	2.2	92	91.8	6.4	152	151.6	10.6	212	211.5	14.8	272	271.3	19.0
33	32.9	2.3	93	92.8	6.5	153	152.6	10.7	213	212.5	14.9	273	272.3	19.0
34	33.9	2.4	94	93.8	6.6	154	153.6	10.7	214	213.5	14.9	274	273.3	19.1
35	34.9	2.4	95	94.8	6.6	155	154.6	10.8	215	214.5	15.0	275	274.3	19.2
36	35.9	2.5	96	95.8	6.7	156	155.6	10.9	216	215.5	15.1	276	275.3	19.3
37	36.9	2.6	97	96.8	6.8	157	156.6	11.0	217	216.5	15.1	277	276.3	19.3
38	37.9	2.7	98	97.8	6.8	158	157.6	11.0	218	217.5	15.2	278	277.3	19.4
39	38.9	2.7	99	98.8	6.9	159	158.6	11.1	219	218.5	15.3	279	278.3	19.5
40	39.9	2.8	100	99.8	7.0	160	159.6	11.2	220	219.5	15.3	280	279.3	19.5
41	40.9	2.9	101	100.8	7.0	161	160.6	11.2	221	220.5	15.4	281	280.3	19.6
42	41.9	2.9	102	101.8	7.1	162	161.6	11.3	222	221.5	15.5	282	281.3	19.7
43	42.9	3.0	103	102.7	7.2	163	162.6	11.4	223	222.5	15.6	283	282.3	19.7
44	43.9	3.1	104	103.7	7.3	164	163.6	11.4	224	223.5	15.6	284	283.3	19.8
45	44.9	3.1	105	104.7	7.3	165	164.6	11.5	225	224.5	15.7	285	284.3	19.9
46	45.9	3.2	106	105.7	7.4	166	165.6	11.6	226	225.4	15.8	286	285.3	20.0
47	46.9	3.3	107	106.7	7.5	167	166.6	11.6	227	226.4	15.8	287	286.3	20.0
48	47.9	3.3	108	107.7	7.5	168	167.6	11.7	228	227.4	15.9	288	287.3	20.1
49	48.9	3.4	109	108.7	7.6	169	168.6	11.8	229	228.4	16.0	289	288.3	20.2
50	49.9	3.5	110	109.7	7.7	170	169.6	11.9	230	229.4	16.0	290	289.3	20.2
51	50.9	3.6	111	110.7	7.7	171	170.6	11.9	231	230.4	16.1	291	290.3	20.3
52	51.9	3.6	112	111.7	7.8	172	171.6	12.0	232	231.4	16.2	292	291.3	20.4
53	52.9	3.7	113	112.7	7.9	173	172.6	12.1	233	232.4	16.3	293	292.3	20.4
54	53.9	3.8	114	113.7	8.0	174	173.6	12.1	234	233.4	16.3	294	293.3	20.5
55	54.9	3.8	115	114.7	8.0	175	174.6	12.2	235	234.4	16.4	295	294.3	20.6
56	55.9	3.9	116	115.7	8.1	176	175.6	12.3	236	235.4	16.5	296	295.3	20.6
57	56.9	4.0	117	116.7	8.2	177	176.6	12.3	237	236.4	16.5	297	296.3	20.7
58	57.9	4.0	118	117.7	8.2	178	177.6	12.4	238	237.4	16.6	298	297.3	20.8
59	58.9	4.1	119	118.7	8.3	179	178.6	12.5	239	238.4	16.7	299	298.3	20.9
60	59.9	4.2	120	119.7	8.4	180	179.6	12.6	240	239.4	16.7	300	299.3	20.9
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 5 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.1	61	60.8	5.3	121	120.5	10.5	181	180.3	15.8	241	240.1	21.0
2	2.0	0.2	62	61.8	5.4	122	121.5	10.6	182	181.3	15.9	242	241.1	21.1
3	3.0	0.3	63	62.8	5.5	123	122.5	10.7	183	182.3	15.9	243	242.1	21.2
4	4.0	0.3	64	63.8	5.6	124	123.5	10.8	184	183.3	16.0	244	243.1	21.3
5	5.0	0.4	65	64.8	5.7	125	124.5	10.9	185	184.3	16.1	245	244.1	21.4
6	6.0	0.5	66	65.7	5.8	126	125.5	11.0	186	185.3	16.2	246	245.1	21.4
7	7.0	0.6	67	66.7	5.8	127	126.5	11.1	187	186.3	16.3	247	246.1	21.5
8	8.0	0.7	68	67.7	5.9	128	127.5	11.2	188	187.3	16.4	248	247.1	21.6
9	9.0	0.8	69	68.7	6.0	129	128.5	11.2	189	188.3	16.5	249	248.1	21.7
10	10.0	0.9	70	69.7	6.1	130	129.5	11.3	190	189.3	16.6	250	249.0	21.8
11	11.0	1.0	71	70.7	6.2	131	130.5	11.4	191	190.3	16.6	251	250.0	21.9
12	12.0	1.0	72	71.7	6.3	132	131.5	11.5	192	191.3	16.7	252	251.0	22.0
13	13.0	1.1	73	72.7	6.4	133	132.5	11.6	193	192.3	16.8	253	252.0	22.1
14	13.9	1.2	74	73.7	6.4	134	133.5	11.7	194	193.3	16.9	254	253.0	22.1
15	14.9	1.3	75	74.7	6.5	135	134.5	11.8	195	194.3	17.0	255	254.0	22.2
16	15.9	1.4	76	75.7	6.6	136	135.5	11.9	196	195.3	17.1	256	255.0	22.3
17	16.9	1.5	77	76.7	6.7	137	136.5	11.9	197	196.3	17.2	257	256.0	22.4
18	17.9	1.6	78	77.7	6.8	138	137.5	12.0	198	197.2	17.3	258	257.0	22.5
19	18.9	1.7	79	78.7	6.9	139	138.5	12.1	199	198.2	17.3	259	258.0	22.6
20	19.9	1.7	80	79.7	7.0	140	139.5	12.2	200	199.2	17.4	260	259.0	22.7
21	20.9	1.8	81	80.7	7.1	141	140.5	12.3	201	200.2	17.5	261	260.0	22.7
22	21.9	1.9	82	81.7	7.1	142	141.5	12.4	202	201.2	17.6	262	261.0	22.8
23	22.9	2.0	83	82.7	7.2	143	142.5	12.5	203	202.2	17.7	263	262.0	22.9
24	23.9	2.1	84	83.7	7.3	144	143.5	12.6	204	203.2	17.8	264	263.0	23.0
25	24.9	2.2	85	84.7	7.4	145	144.4	12.6	205	204.2	17.9	265	264.0	23.1
26	25.9	2.3	86	85.7	7.5	146	145.4	12.7	206	205.2	18.0	266	265.0	23.2
27	26.9	2.4	87	86.7	7.6	147	146.4	12.8	207	206.2	18.0	267	266.0	23.3
28	27.9	2.4	88	87.7	7.7	148	147.4	12.9	208	207.2	18.1	268	267.0	23.4
29	28.9	2.5	89	88.7	7.8	149	148.4	13.0	209	208.2	18.2	269	268.0	23.4
30	29.9	2.6	90	89.7	7.8	150	149.4	13.1	210	209.2	18.3	270	269.0	23.5
31	30.9	2.7	91	90.7	7.9	151	150.4	13.2	211	210.2	18.4	271	270.0	23.6
32	31.9	2.8	92	91.6	8.0	152	151.4	13.2	212	211.2	18.5	272	271.0	23.7
33	32.9	2.9	93	92.6	8.1	153	152.4	13.3	213	212.2	18.6	273	272.0	23.8
34	33.9	3.0	94	93.6	8.2	154	153.4	13.4	214	213.2	18.7	274	273.0	23.9
35	34.9	3.1	95	94.6	8.3	155	154.4	13.5	215	214.2	18.7	275	274.0	24.0
36	35.9	3.1	96	95.6	8.4	156	155.4	13.6	216	215.2	18.8	276	274.9	24.1
37	36.9	3.2	97	96.6	8.5	157	156.4	13.7	217	216.2	18.9	277	275.9	24.1
38	37.9	3.3	98	97.6	8.5	158	157.4	13.8	218	217.2	19.0	278	276.9	24.2
39	38.9	3.4	99	98.6	8.6	159	158.4	13.9	219	218.2	19.1	279	277.9	24.3
40	39.8	3.5	100	99.6	8.7	160	159.4	13.9	220	219.2	19.2	280	278.9	24.4
41	40.8	3.6	101	100.6	8.8	161	160.4	14.0	221	220.2	19.3	281	279.9	24.5
42	41.8	3.7	102	101.6	8.9	162	161.4	14.1	222	221.2	19.3	282	280.9	24.6
43	42.8	3.7	103	102.6	9.0	163	162.4	14.2	223	222.2	19.4	283	281.9	24.7
44	43.8	3.8	104	103.6	9.1	164	163.4	14.3	224	223.1	19.5	284	282.9	24.8
45	44.8	3.9	105	104.6	9.2	165	164.4	14.4	225	224.1	19.6	285	283.9	24.8
46	45.8	4.0	106	105.6	9.2	166	165.4	14.5	226	225.1	19.7	286	284.9	24.9
47	46.8	4.1	107	106.6	9.3	167	166.4	14.6	227	226.1	19.8	287	285.9	25.0
48	47.8	4.2	108	107.6	9.4	168	167.4	14.6	228	227.1	19.9	288	286.9	25.1
49	48.8	4.3	109	108.6	9.5	169	168.4	14.7	229	228.1	20.0	289	287.9	25.2
50	49.8	4.4	110	109.6	9.6	170	169.4	14.8	230	229.1	20.0	290	288.9	25.3
51	50.8	4.4	111	110.6	9.7	171	170.3	14.9	231	230.1	20.1	291	289.9	25.4
52	51.8	4.5	112	111.6	9.8	172	171.3	15.0	232	231.1	20.2	292	290.9	25.4
53	52.8	4.6	113	112.6	9.8	173	172.3	15.1	233	232.1	20.3	293	291.9	25.5
54	53.8	4.7	114	113.6	9.9	174	173.3	15.2	234	233.1	20.4	294	292.9	25.6
55	54.8	4.8	115	114.6	10.0	175	174.3	15.3	235	234.1	20.5	295	293.9	25.7
56	55.8	4.9	116	115.6	10.1	176	175.3	15.3	236	235.1	20.6	296	294.9	25.8
57	56.8	5.0	117	116.6	10.2	177	176.3	15.4	237	236.1	20.7	297	295.9	25.9
58	57.8	5.1	118	117.6	10.3	178	177.3	15.5	238	237.1	20.7	298	296.9	26.0
59	58.8	5.1	119	118.5	10.4	179	178.3	15.6	239	238.1	20.8	299	297.9	26.1
60	59.8	5.2	120	119.5	10.5	180	179.3	15.7	240	239.1	20.9	300	298.9	26.1
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 85 Degrees.

TABLE IX.

Difference of Latitude and Departure for 6 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.1	61	60.7	6.4	121	120.3	12.6	181	180.0	18.9	241	239.7	25.2
2	2.0	0.2	62	61.7	6.5	122	121.3	12.8	182	181.0	19.0	242	240.7	25.3
3	3.0	0.3	63	62.7	6.6	123	122.3	12.9	183	182.0	19.1	243	241.7	25.4
4	4.0	0.4	64	63.6	6.7	124	123.3	13.0	184	183.0	19.2	244	242.7	25.5
5	5.0	0.5	65	64.6	6.8	125	124.3	13.1	185	184.0	19.3	245	243.7	25.6
6	6.0	0.6	66	65.6	6.9	126	125.3	13.2	186	185.0	19.4	246	244.7	25.7
7	7.0	0.7	67	66.6	7.0	127	126.3	13.3	187	186.0	19.5	247	245.6	25.8
8	8.0	0.8	68	67.6	7.1	128	127.3	13.4	188	187.0	19.7	248	246.6	25.9
9	9.0	0.9	69	68.6	7.2	129	128.3	13.5	189	188.0	19.8	249	247.6	26.0
10	9.9	1.0	70	69.6	7.3	130	129.3	13.6	190	189.0	19.9	250	248.6	26.1
11	10.9	1.1	71	70.6	7.4	131	130.3	13.7	191	190.0	20.0	251	249.6	26.2
12	11.9	1.3	72	71.6	7.5	132	131.3	13.8	192	190.9	20.1	252	250.6	26.3
13	12.9	1.4	73	72.6	7.6	133	132.3	13.9	193	191.9	20.2	253	251.6	26.4
14	13.9	1.5	74	73.6	7.7	134	133.3	14.0	194	192.9	20.3	254	252.6	26.6
15	14.9	1.6	75	74.6	7.8	135	134.3	14.1	195	193.9	20.4	255	253.6	26.7
16	15.9	1.7	76	75.6	7.9	136	135.3	14.2	196	194.9	20.5	256	254.6	26.8
17	16.9	1.8	77	76.6	8.0	137	136.2	14.3	197	195.9	20.6	257	255.6	26.9
18	17.9	1.9	78	77.6	8.2	138	137.2	14.4	198	196.9	20.7	258	256.6	27.0
19	18.9	2.0	79	78.6	8.3	139	138.2	14.5	199	197.9	20.8	259	257.6	27.1
20	19.9	2.1	80	79.6	8.4	140	139.2	14.6	200	198.9	20.9	260	258.6	27.2
21	20.9	2.2	81	80.6	8.5	141	140.2	14.7	201	199.9	21.0	261	259.6	27.3
22	21.9	2.3	82	81.6	8.6	142	141.2	14.8	202	200.9	21.1	262	260.6	27.4
23	22.9	2.4	83	82.5	8.7	143	142.2	14.9	203	201.9	21.2	263	261.6	27.5
24	23.9	2.5	84	83.5	8.8	144	143.2	15.1	204	202.9	21.3	264	262.6	27.6
25	24.9	2.6	85	84.5	8.9	145	144.2	15.2	205	203.9	21.4	265	263.5	27.7
26	25.9	2.7	86	85.5	9.0	146	145.2	15.3	206	204.9	21.5	266	264.5	27.8
27	26.9	2.8	87	86.5	9.1	147	146.2	15.4	207	205.9	21.6	267	265.5	27.9
28	27.8	2.9	88	87.5	9.2	148	147.2	15.5	208	206.9	21.7	268	266.5	28.0
29	28.8	3.0	89	88.5	9.3	149	148.2	15.6	209	207.9	21.8	269	267.5	28.1
30	29.8	3.1	90	89.5	9.4	150	149.2	15.7	210	208.8	22.0	270	268.5	28.2
31	30.8	3.2	91	90.5	9.5	151	150.2	15.8	211	209.8	22.1	271	269.5	28.3
32	31.8	3.3	92	91.5	9.6	152	151.2	15.9	212	210.8	22.2	272	270.5	28.4
33	32.8	3.4	93	92.5	9.7	153	152.2	16.0	213	211.8	22.3	273	271.5	28.5
34	33.8	3.6	94	93.5	9.8	154	153.2	16.1	214	212.8	22.4	274	272.5	28.6
35	34.8	3.7	95	94.5	9.9	155	154.2	16.2	215	213.8	22.5	275	273.5	28.7
36	35.8	3.8	96	95.5	10.0	156	155.1	16.3	216	214.8	22.6	276	274.5	28.8
37	36.8	3.9	97	96.5	10.1	157	156.1	16.4	217	215.8	22.7	277	275.5	29.0
38	37.8	4.0	98	97.5	10.2	158	157.1	16.5	218	216.8	22.8	278	276.5	29.1
39	38.8	4.1	99	98.5	10.3	159	158.1	16.6	219	217.8	22.9	279	277.5	29.2
40	39.8	4.2	100	99.5	10.5	160	159.1	16.7	220	218.8	23.0	280	278.5	29.3
41	40.8	4.3	101	100.4	10.6	161	160.1	16.8	221	219.8	23.1	281	279.5	29.4
42	41.8	4.4	102	101.4	10.7	162	161.1	16.9	222	220.8	23.2	282	280.5	29.5
43	42.8	4.5	103	102.4	10.8	163	162.1	17.0	223	221.8	23.3	283	281.4	29.6
44	43.8	4.6	104	103.4	10.9	164	163.1	17.1	224	222.8	23.4	284	282.4	29.7
45	44.8	4.7	105	104.4	11.0	165	164.1	17.2	225	223.8	23.5	285	283.4	29.8
46	45.7	4.8	106	105.4	11.1	166	165.1	17.4	226	224.8	23.6	286	284.4	29.9
47	46.7	4.9	107	106.4	11.2	167	166.1	17.5	227	225.8	23.7	287	285.4	30.0
48	47.7	5.0	108	107.4	11.3	168	167.1	17.6	228	226.8	23.8	288	286.4	30.1
49	48.7	5.1	109	108.4	11.4	169	168.1	17.7	229	227.7	23.9	289	287.4	30.2
50	49.7	5.2	110	109.4	11.5	170-	169.1	17.8	230	228.7	24.0	290	288.4	30.3
51	50.7	5.3	111	110.4	11.6	171	170.1	17.9	231	229.7	24.1	291	289.4	30.4
52	51.7	5.4	112	111.4	11.7	172	171.1	18.0	232	230.7	24.3	292	290.4	30.5
53	52.7	5.5	113	112.4	11.8	173	172.1	18.1	233	231.7	24.4	293	291.4	30.6
54	53.7	5.6	114	113.4	11.9	174	173.0	18.2	234	232.7	24.5	294	292.4	30.7
55	54.7	5.7	115	114.4	12.0	175	174.0	18.3	235	233.7	24.6	295	293.4	30.8
56	55.7	5.9	116	115.4	12.1	176	175.0	18.4	236	234.7	24.7	296	294.4	30.9
57	56.7	6.0	117	116.4	12.2	177	176.0	18.5	237	235.7	24.8	297	295.4	31.0
58	57.7	6.1	118	117.4	12.3	178	177.0	18.6	238	236.7	24.9	298	296.4	31.1
59	58.7	6.2	119	118.3	12.4	179	178.0	18.7	239	237.7	25.0	299	297.4	31.3
60	59.7	6.3	120	119.3	12.5	180	179.0	18.8	240	238.7	25.1	300	298.4	31.4
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 7 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.1	61	60.5	7.4	121	120.1	14.7	181	179.7	22.1	241	239.2	29.4
2	2.0	0.2	62	61.5	7.6	122	121.1	14.9	182	180.6	22.2	242	240.2	29.5
3	3.0	0.4	63	62.5	7.7	123	122.1	15.0	183	181.6	22.3	243	241.2	29.6
4	4.0	0.5	64	63.5	7.8	124	123.1	15.1	184	182.6	22.4	244	242.2	29.7
5	5.0	0.6	65	64.5	7.9	125	124.1	15.2	185	183.6	22.5	245	243.2	29.9
6	6.0	0.7	66	65.5	8.0	126	125.1	15.4	186	184.6	22.7	246	244.2	30.0
7	6.9	0.9	67	66.5	8.2	127	126.1	15.5	187	185.6	22.8	247	245.2	30.1
8	7.9	1.0	68	67.5	8.3	128	127.0	15.6	188	186.6	22.9	248	246.2	30.2
9	8.9	1.1	69	68.5	8.4	129	128.0	15.7	189	187.6	23.0	249	247.1	30.3
10	9.9	1.2	70	69.5	8.5	130	129.0	15.8	190	188.6	23.2	250	248.1	30.5
11	10.9	1.3	71	70.5	8.7	131	130.0	16.0	191	189.6	23.3	251	249.1	30.6
12	11.9	1.5	72	71.5	8.8	132	131.0	16.1	192	190.6	23.4	252	250.1	30.7
13	12.9	1.6	73	72.5	8.9	133	132.0	16.2	193	191.6	23.5	253	251.1	30.8
14	13.9	1.7	74	73.4	9.0	134	133.0	16.3	194	192.6	23.6	254	252.1	31.0
15	14.9	1.8	75	74.4	9.1	135	134.0	16.5	195	193.5	23.8	255	253.1	31.1
16	15.9	1.9	76	75.4	9.3	136	135.0	16.6	196	194.5	23.9	256	254.1	31.2
17	16.9	2.1	77	76.4	9.4	137	136.0	16.7	197	195.5	24.0	257	255.1	31.3
18	17.9	2.2	78	77.4	9.5	138	137.0	16.8	198	196.5	24.1	258	256.1	31.4
19	18.9	2.3	79	78.4	9.6	139	138.0	16.9	199	197.5	24.3	259	257.1	31.6
20	19.9	2.4	80	79.4	9.7	140	139.0	17.1	200	198.5	24.4	260	258.1	31.7
21	20.8	2.6	81	·80.4	9.9	141	139.9	17.2	201	199.5	24.5	261	259.1	31.8
22	21.8	2.7	82	81.4	10.0	142	140.9	17.3	202	200.5	24.6	262	260.0	31.9
23	22.8	2.8	83	82.4	10.1	143	141.9	17.4	203	201.5	24.7	263	261.0	32.1
24	23.8	2.9	84	83.4	10.2	144	142.9	17.5	204	202.5	24.9	264	262.0	32.2
25	24.8	3.0	85	84.4	10.4	145	143.9	17.7	205	203.5	25.0	265	263.0	32.3
26	25.8	3.2	86	85.4	10.5	146	144.9	17.8	206	204.5	25.1	266	264.0	32.4
27	26.8	3.3	87	86.4	10.6	147	145.9	17.9	207	205.5	25.2	267	265.0	32.5
28	27.8	3.4	88	87.3	10.7	148	146.9	18.0	208	206.4	25.3	268	266.0	32.7
29	28.8	3.5	89	88.3	10.8	149	147.9	18.2	209	207.4	25.5	269	267.0	32.8
30	29.8	3.7	90	89.3	11.0	150	148.9	18.3	210	208.4	25.6	270	268.0	32.9
31	30.8	3.8	91	90.3	11.1	151	149.9	18.4	211	209.4	25.7	271	269.0	33.0
32	31.8	3.9	92	91.3	11.2	152	150.9	18.5	212	210.4	25.8	272	270.0	33.1
33	32.8	4.0	93	92.3	11.3	153	151.9	18.6	213	211.4	26.0	273	271.0	33.3
34	33.7	4.1	94	93.3	11.5	154	152.9	18.8	214	212.4	26.1	274	272.0	33.4
35	34.7	4.3	95	94.3	11.6	155	153.8	18.9	215	213.4	26.2	275	273.0	33.5
36	35.7	4.4	96	95.3	11.7	156	154.8	19.0	216	214.4	26.3	276	273.9	33.6
37	36.7	4.5	97	96.3	11.8	157	155.8	19.1	217	215.4	26.4	277	274.9	33.8
38	37.7	4.6	98	97.3	11.9	158	156.8	19.3	218	216.4	26.6	278	275.9	33.9
39	38.7	4.8	99	98.3	12.1	159	157.8	19.4	219	217.4	26.7	279	276.9	34.0
40	39.7	4.9	100	99.3	12.2	160	158.8	19.5	220	218.4	26.8	280	277.9	34.1
41	40.7	5.0	101	100.2	12.3	161	159.8	19.6	221	219.4	26.9	281	278.9	34.2
42	41.7	5.1	102	101.2	12.4	162	160.8	19.7	222	220.3	27.1	282	279.9	34.4
43	42.7	5.2	103	102.2	12.6	163	161.8	19.9	223	221.3	27.2	283	280.9	34.5
44	43.7	5.4	104	103.2	12.7	164	162.8	20.0	224	222.3	27.3	284	281.9	34.6
45	44.7	5.5	105	104.2	12.8	165	163.8	20.1	225	223.3	27.4	285	282.9	34.7
46	45.7	5.6	106	105.2	12.9	166	164.8	20.2	226	224.3	27.5	286	283.9	34.9
47	46.6	5.7	107	106.2	13.0	167	165.8	20.4	227	225.3	27.7	287	284.9	35.0
48	47.6	5.8	108	107.2	13.2	168	166.7	20.5	228	226.3	27.8	288	285.9	35.1
49	48.6	6.0	109	108.2	13.3	169	167.7	20.6	229	227.3	27.9	289	286.8	35.2
50	49.6	6.1	110	109.2	13.4	170	168.7	20.7	230	228.3	28.0	290	287.8	35.3
51	50.6	6.2	111	110.2	13.5	171	169.7	20.8	231	229.3	28.2	291	288.8	35.5
52	51.6	6.3	112	111.2	13.6	172	170.7	21.0	232	230.3	28.3	292	289.8	35.6
53	52.6	6.5	113	112.2	13.8	173	171.7	21.1	233	231.3	28.4	293	290.8	35.7
54	53.6	6.6	114	113.2	13.9	174	172.7	21.2	234	232.3	28.5	294	291.8	35.8
55	54.6	6.7	115	114.1	14.0	175	173.7	21.3	235	233.2	28.6	295	292.8	36.0
56	55.6	6.8	116	115.1	14.1	176	174.7	21.4	236	234.2	28.8	296	293.8	36.1
57	56.6	6.9	117	116.1	14.3	177	175.7	21.6	237	235.2	28.9	297	294.8	36.2
58	57.6	7.1	118	117.1	14.4	178	176.7	21.7	238	236.2	29.0	298	295.8	36.3
59	58.6	7.2	119	118.1	14.5	179	177.7	21.8	239	237.2	29.1	299	296.8	36.4
60	59.6	7.3	120	119.1	14.6	180	178.7	21.9	240	238.2	29.2	300	297.8	36.6
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 83 Degrees.

TABLE IX. 85

Difference of Latitude and Departure for 8 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.1	61	60.4	8.5	121	119.8	16.8	181	179.2	25.2	241	238.7	33.5
2	2.0	0.3	62	61.4	8.6	122	120.8	17.0	182	180.2	25.3	242	239.6	33.7
3	3.0	0.4	63	62.4	8.8	123	121.8	17.1	183	181.2	25.5	243	240.6	33.8
4	4.0	0.6	64	63.4	8.9	124	122.8	17.3	184	182.2	25.6	244	241.6	34.0
5	5.0	0.7	65	64.4	9.0	125	123.8	17.4	185	183.2	25.7	245	242.6	34.1
6	5.9	0.8	66	65.4	9.2	126	124.8	17.5	186	184.2	25.9	246	243.6	34.2
7	6.9	1.0	67	66.3	9.3	127	125.8	17.7	187	185.2	26.0	247	244.6	34.4
8	7.9	1.1	68	67.3	9.5	128	126.8	17.8	188	186.2	26.2	248	245.6	34.5
9	8.9	1.3	69	68.3	9.6	129	127.7	18.0	189	187.2	26.3	249	246.6	34.7
10	9.9	1.4	70	69.3	9.7	130	128.7	18.1	190	188.2	26.4	250	247.6	34.8
11	10.9	1.5	71	70.3	9.9	131	129.7	18.2	191	189.1	26.6	251	248.6	34.9
12	11.9	1.7	72	71.3	10.0	132	130.7	18.4	192	190.1	26.7	252	249.5	35.1
13	12.9	1.8	73	72.3	10.2	133	131.7	18.5	193	191.1	26.9	253	250.5	35.2
14	13.9	1.9	74	73.3	10.3	134	132.7	18.6	194	192.1	27.0	254	251.5	35.3
15	14.9	2.1	75	74.3	10.4	135	133.7	18.8	195	193.1	27.1	255	252.5	35.5
16	15.8	2.2	76	75.3	10.6	136	134.7	18.9	196	194.1	27.3	256	253.5	35.6
17	16.8	2.4	77	76.3	10.7	137	135.7	19.1	197	195.1	27.4	257	254.5	35.8
18	17.8	2.5	78	77.2	10.9	138	136.7	19.2	198	196.1	27.6	258	255.5	35.9
19	18.8	2.6	79	78.2	11.0	139	137.7	19.3	199	197.1	27.7	259	256.5	36.0
20	19.8	2.8	80	79.2	11.1	140	138.6	19.5	200	198.1	27.8	260	257.5	36.2
21	20.8	2.9	81	80.2	11.3	141	139.6	19.6	201	199.0	28.0	261	258.5	36.3
22	21.8	3.1	82	81.2	11.4	142	140.6	19.8	202	200.0	28.1	262	259.5	36.5
23	22.8	3.2	83	82.2	11.6	143	141.6	19.9	203	201.0	28.3	263	260.4	36.6
24	23.8	3.3	84	83.2	11.7	144	142.6	20.0	204	202.0	28.4	264	261.4	36.7
25	24.8	3.5	85	84.2	11.8	145	143.6	20.2	205	203.0	28.5	265	262.4	36.9
26	25.7	3.6	86	85.2	12.0	146	144.6	20.3	206	204.0	28.7	266	263.4	37.0
27	26.7	3.8	87	86.2	12.1	147	145.6	20.5	207	205.0	28.8	267	264.4	37.2
28	27.7	3.9	88	87.1	12.2	148	146.6	20.6	208	206.0	28.9	268	265.4	37.3
29	28.7	4.0	89	88.1	12.4	149	147.5	20.7	209	207.0	29.1	269	266.4	37.4
30	29.7	4.2	90	89.1	12.5	150	148.5	20.9	210	208.0	29.2	270	267.4	37.6
31	30.7	4.3	91	90.1	12.7	151	149.5	21.0	211	208.9	29.4	271	268.4	37.7
32	31.7	4.5	92	91.1	12.8	152	150.5	21.2	212	209.9	29.5	272	269.4	37.9
33	32.7	4.6	93	92.1	12.9	153	151.5	21.3	213	210.9	29.6	273	270.3	38.0
34	33.7	4.7	94	93.1	13.1	154	152.5	21.4	214	211.9	29.8	274	271.3	38.1
35	34.7	4.9	95	94.1	13.2	155	153.5	21.6	215	212.9	29.9	275	272.3	38.3
36	35.6	5.0	96	95.1	13.4	156	154.5	21.7	216	213.9	30.1	276	273.3	38.4
37	36.6	5.1	97	96.1	13.5	157	155.5	21.9	217	214.9	30.2	277	274.3	38.6
38	37.6	5.3	98	97.0	13.6	158	156.5	22.0	218	215.9	30.3	278	275.3	38.7
39	38.6	5.4	99	98.0	13.8	159	157.5	22.1	219	216.9	30.5	279	276.3	38.8
40	39.6	5.6	100	99.0	13.9	160	158.4	22.3	220	217.9	30.6	280	277.3	39.0
41	40.6	5.7	101	100.0	14.1	161	159.4	22.4	221	218.8	30.8	281	278.3	39.1
42	41.6	5.8	102	101.0	14.2	162	160.4	22.5	222	219.8	30.9	282	279.3	39.2
43	42.6	6.0	103	102.0	14.3	163	161.4	22.7	223	220.8	31.0	283	280.2	39.4
44	43.6	6.1	104	103.0	14.5	164	162.4	22.8	224	221.8	31.2	284	281.2	39.5
45	44.6	6.3	105	104.0	14.6	165	163.4	23.0	225	222.8	31.3	285	282.2	39.7
46	45.6	6.4	106	105.0	14.8	166	164.4	23.1	226	223.8	31.5	286	283.2	39.8
47	46.5	6.5	107	106.0	14.9	167	165.4	23.2	227	224.8	31.6	287	284.2	39.9
48	47.5	6.7	108	106.9	15.0	168	166.4	23.4	228	225.8	31.7	288	285.2	40.1
49	48.5	6.8	109	107.9	15.2	169	167.4	23.5	229	226.8	31.9	289	286.2	40.2
50	49.5	7.0	110	108.9	15.3	170	168.3	23.7	230	227.8	32.0	290	287.2	40.4
51	50.5	7.1	111	109.9	15.4	171	169.3	23.8	231	228.8	32.1	291	288.2	40.5
52	51.5	7.2	112	110.9	15.6	172	170.3	23.9	232	229.7	32.3	292	289.2	40.6
53	52.5	7.4	113	111.9	15.7	173	171.3	24.1	233	230.7	32.4	293	290.1	40.8
54	53.5	7.5	114	112.9	15.9	174	172.3	24.2	234	231.7	32.6	294	291.1	40.9
55	54.5	7.7	115	113.9	16.0	175	173.3	24.4	235	232.7	32.7	295	292.1	41.1
56	55.5	7.8	116	114.9	16.1	176	174.3	24.5	236	233.7	32.8	296	293.1	41.2
57	56.4	7.9	117	115.9	16.3	177	175.3	24.6	237	234.7	33.0	297	294.1	41.3
58	57.4	8.1	118	116.9	16.4	178	176.3	24.8	238	235.7	33.1	298	295.1	41.5
59	58.4	8.2	119	117.8	16.6	179	177.3	24.9	239	236.7	33.3	299	296.1	41.6
60	59.4	8.4	120	118.8	16.7	180	178.2	25.1	240	237.7	33.4	300	297.1	41.8
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 9 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.2	61	60.2	9.5	121	119.5	18.9	181	178.8	28.3	241	238.0	37.7
2	2.0	0.3	62	61.2	9.7	122	120.5	19.1	182	179.8	28.5	242	239.0	37.9
3	2.0	0.5	63	62.2	9.9	123	121.5	19.2	183	180.7	28.6	243	240.0	38.0
4	3.9	0.6	64	63.2	10.0	124	122.5	19.4	184	181.7	28.8	244	241.0	38.2
5	4.9	0.8	65	64.2	10.2	125	123.5	19.6	185	182.7	28.9	245	242.0	38.3
6	5.9	0.9	66	65.2	10.3	126	124.4	19.7	186	183.7	29.1	246	243.0	38.5
7	6.9	1.1	67	66.2	10.5	127	125.4	19.9	187	184.7	29.3	247	244.0	38.6
8	7.9	1.3	68	67.2	10.6	128	126.4	20.0	188	185.7	29.4	248	244.9	38.8
9	8.9	1.4	69	68.2	10.8	129	127.4	20.2	189	186.7	29.6	249	245.9	39.0
10	9.9	1.6	70	69.1	11.0	130	128.4	20.3	190	187.7	29.7	250	246.9	39.1
11	10.9	1.7	71	70.1	11.1	131	129.4	20.5	191	188.6	29.9	251	247.9	39.3
12	11.9	1.9	72	71.1	11.3	132	130.4	20.6	192	189.6	30.0	252	248.9	39.4
13	12.8	2.0	73	72.1	11.4	133	131.4	20.8	193	190.6	30.2	253	249.9	39.6
14	13.8	2.2	74	73.1	11.6	134	132.4	21.0	194	191.6	30.3	254	250.9	39.7
15	14.8	2.3	75	74.1	11.7	135	133.3	21.1	195	192.6	30.5	255	251.9	39.9
16	15.8	2.5	76	75.1	11.9	136	134.3	21.3	196	193.6	30.7	256	252.8	40.0
17	16.8	2.7	77	76.1	12.0	137	135.3	21.4	197	194.6	30.8	257	253.8	40.2
18	17.8	2.8	78	77.0	12.2	138	136.3	21.6	198	195.6	31.0	258	254.8	40.4
19	18.8	3.0	79	78.0	12.4	139	137.3	21.7	199	196.5	31.1	259	255.8	40.5
20	19.8	3.1	80	79.0	12.5	140	138.3	21.9	200	197.5	31.3	260	256.8	40.7
21	20.7	3.3	81	80.0	12.7	141	139.3	22.1	201	198.5	31.4	261	257.8	40.8
22	21.7	3.4	82	81.0	12.8	142	140.3	22.2	202	199.5	31.6	262	258.8	41.0
23	22.7	3.6	83	82.0	13.0	143	141.2	22.4	203	200.5	31.8	263	259.8	41.1
24	23.7	3.8	84	83.0	13.1	144	142.2	22.5	204	201.5	31.9	264	260.7	41.3
25	24.7	3.9	85	84.0	13.3	145	143.2	22.7	205	202.5	32.1	265	261.7	41.5
26	25.7	4.1	86	84.9	13.5	146	144.2	22.8	206	203.5	32.2	266	262.7	41.6
27	26.7	4.2	87	85.9	13.6	147	145.2	23.0	207	204.5	32.4	267	263.7	41.8
28	27.7	4.4	88	86.9	13.8	148	146.2	23.2	208	205.4	32.5	268	264.7	41.9
29	28.6	4.5	89	87.9	13.9	149	147.2	23.3	209	206.4	32.7	269	265.7	42.1
30	29.6	4.7	90	88.9	14.1	150	148.2	23.5	210	207.4	32.9	270	266.7	42.2
31	30.6	4.8	91	89.9	14.2	151	149.1	23.6	211	208.4	33.0	271	267.7	42.4
32	31.6	5.0	92	90.9	14.4	152	150.1	23.8	212	209.4	33.2	272	268.7	42.6
33	32.6	5.2	93	91.9	14.5	153	151.1	23.9	213	210.4	33.3	273	269.6	42.7
34	33.6	5.3	94	92.8	14.7	154	152.1	24.1	214	211.4	33.5	274	270.6	42.9
35	34.6	5.5	95	93.8	14.9	155	153.1	24.2	215	212.4	33.6	275	271.6	43.0
36	35.6	5.6	96	94.8	15.0	156	154.1	24.4	216	213.3	33.8	276	272.6	43.2
37	36.5	5.8	97	95.8	15.2	157	155.1	24.6	217	214.3	33.9	277	273.6	43.3
38	37.5	5.9	98	96.8	15.3	158	156.1	24.7	218	215.3	34.1	278	274.6	43.5
39	38.5	6.1	99	97.8	15.5	159	157.0	24.9	219	216.3	34.3	279	275.6	43.6
40	39.5	6.3	100	98.8	15.6	160	158.0	25.0	220	217.3	34.4	280	276.6	43.8
41	40.5	6.4	101	99.8	15.8	161	159.0	25.2	221	218.3	34.6	281	277.5	44.0
42	41.5	6.6	102	100.7	16.0	162	160.0	25.3	222	219.3	34.7	282	278.5	44.1
43	42.5	6.7	103	101.7	16.1	163	161.0	25.5	223	220.3	34.9	283	279.5	44.3
44	43.5	6.9	104	102.7	16.3	164	162.0	25.7	224	221.2	35.0	284	280.5	44.4
45	44.4	7.0	105	103.7	16.4	165	163.0	25.8	225	222.2	35.2	285	281.5	44.6
46	45.4	7.2	106	104.7	16.6	166	164.0	26.0	226	223.2	35.4	286	282.5	44.7
47	46.4	7.4	107	105.7	16.7	167	164.9	26.1	227	224.2	35.5	287	283.5	44.9
48	47.4	7.5	108	106.7	16.9	168	165.9	26.3	228	225.2	35.7	288	284.5	45.1
49	48.4	7.7	109	107.7	17.1	169	166.9	26.4	229	226.2	35.8	289	285.4	45.2
50	49.4	7.8	110	108.6	17.2	170	167.9	26.6	230	227.2	36.0	290	286.4	45.4
51	50.4	8.0	111	109.6	17.4	171	168.9	26.8	231	228.2	36.1	291	287.4	45.5
52	51.4	8.1	112	110.6	17.5	172	169.9	26.9	232	229.1	36.3	292	288.4	45.7
53	52.3	8.3	113	111.6	17.7	173	170.9	27.1	233	230.1	36.4	293	289.4	45.8
54	53.3	8.4	114	112.6	17.8	174	171.9	27.2	234	231.1	36.6	294	290.4	46.0
55	54.3	8.6	115	113.6	18.0	175	172.8	27.4	235	232.1	36.8	295	291.4	46.1
56	55.3	8.8	116	114.6	18.1	176	173.8	27.5	236	233.1	36.9	296	292.4	46.3
57	56.3	8.9	117	115.6	18.3	177	174.8	27.7	237	234.1	37.1	297	293.3	46.5
58	57.3	9.1	118	116.5	18.5	178	175.8	27.8	238	235.1	37.2	298	294.3	46.6
59	58.3	9.2	119	117.5	18.6	179	176.8	28.0	239	236.1	37.4	299	295.3	46.8
60	59.3	9.4	120	118.5	18.8	180	177.8	28.2	240	237.0	37.5	300	296.3	46.9
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX. 87

Difference of Latitude and Departure for 10 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.2	61	60.1	10.6	121	119.2	21.0	181	178.3	31.4	241	237.3	41.8
2	2.0	0.3	62	61.1	10.8	122	120.1	21.2	182	179.2	31.6	242	238.3	42.0
3	3.0	0.5	63	62.0	10.9	123	121.1	21.4	183	180.2	31.8	243	239.3	42.2
4	3.9	0.7	64	63.0	11.1	124	122.1	21.5	184	181.2	32.0	244	240.3	42.4
5	4.9	0.9	65	64.0	11.3	125	123.1	21.7	185	182.2	32.1	245	241.3	42.5
6	5.9	1.0	66	65.0	11.5	126	124.1	21.9	186	183.2	32.3	246	242.3	42.7
7	6.9	1.2	67	66.0	11.6	127	125.1	22.1	187	184.2	32.5	247	243.2	42.9
8	7.9	1.4	68	67.0	11.8	128	126.1	22.2	188	185.1	32.6	248	244.2	43.1
9	8.9	1.6	69	68.0	12.0	129	127.0	22.4	189	186.1	32.8	249	245.2	43.2
10	9.8	1.7	70	68.9	12.2	130	128.0	22.6	190	187.1	33.0	250	246.2	43.4
11	10.8	1.9	71	69.9	12.3	131	129.0	22.7	191	188.1	33.2	251	247.2	43.6
12	11.8	2.1	72	70.9	12.5	132	130.0	22.9	192	189.1	33.3	252	248.2	43.8
13	12.8	2.3	73	71.9	12.7	133	131.0	23.1	193	190.1	33.5	253	249.2	43.9
14	13.8	2.4	74	72.9	12.8	134	132.0	23.3	194	191.1	33.7	254	250.1	44.1
15	14.8	2.6	75	73.9	13.0	135	132.9	23.4	195	192.0	33.9	255	251.1	44.3
16	15.8	2.8	76	74.8	13.2	136	133.9	23.6	196	193.0	34.0	256	252.1	44.5
17	16.7	3.0	77	75.8	13.4	137	134.9	23.8	197	194.0	34.2	257	253.1	44.6
18	17.7	3.1	78	76.8	13.5	138	135.9	24.0	198	195.0	34.4	258	254.1	44.8
19	18.7	3.3	79	77.8	13.7	139	136.9	24.1	199	196.0	34.6	259	255.1	45.0
20	19.7	3.5	80	78.8	13.9	140	137.9	24.3	200	197.0	34.7	260	256.1	45.1
21	20.7	3.6	81	79.8	14.1	141	138.9	24.5	201	197.9	34.9	261	257.0	45.3
22	21.7	3.8	82	80.8	14.2	142	139.8	24.7	202	198.9	35.1	262	258.0	45.5
23	22.7	4.0	83	81.7	14.4	143	140.8	24.8	203	199.9	35.3	263	259.0	45.7
24	23.6	4.2	84	82.7	14.6	144	141.8	25.0	204	200.9	35.4	264	260.0	45.8
25	24.6	4.3	85	83.7	14.8	145	142.8	25.2	205	201.9	35.6	265	261.0	46.0
26	25.6	4.5	86	84.7	14.9	146	143.8	25.4	206	202.9	35.8	266	262.0	46.2
27	26.6	4.7	87	85.7	15.1	147	144.8	25.4	207	203.9	35.9	267	262.9	46.4
28	27.6	4.9	88	86.7	15.3	148	145.8	25.7	208	204.8	36.1	268	263.9	46.5
29	28.6	5.0	89	87.6	15.5	149	146.7	25.9	209	205.8	36.3	269	264.9	46.7
30	29.5	5.2	90	88.6	15.6	150	147.7	26.0	210	206.8	36.5	270	265.9	46.9
31	30.5	5.4	91	89.6	15.8	151	148.7	26.2	211	207.8	36.6	271	266.9	47.1
32	31.5	5.6	92	90.6	16.0	152	149.7	26.4	212	208.8	36.8	272	267.9	47.2
33	32.5	5.7	93	91.6	16.1	153	150.7	26.6	213	209.8	37.0	273	268.9	47.4
34	33.5	5.9	94	92.6	16.3	154	151.7	26.7	214	210.7	37.2	274	269.8	47.6
35	34.5	6.1	95	93.6	16.5	155	152.6	26.9	215	211.7	37.3	275	270.8	47.8
36	35.5	6.3	96	94.5	16.7	156	153.6	27.1	216	212.7	37.5	276	271.8	47.9
37	36.4	6.4	97	95.5	16.8	157	154.6	27.3	217	213.7	37.7	277	272.8	48.1
38	37.4	6.6	98	96.5	17.0	158	155.6	27.4	218	214.7	37.9	278	273.8	48.3
39	38.4	6.8	99	97.5	17.2	159	156.6	27.6	219	215.7	38.0	279	274.8	48.4
40	39.4	6.9	100	98.5	17.4	160	157.6	27.8	220	216.7	38.2	280	275.7	48.6
41	40.4	7.1	101	99.5	17.5	161	158.6	28.0	221	217.6	38.4	281	276.7	48.8
42	41.4	7.3	102	100.5	17.7	162	159.5	28.1	222	218.6	38.5	282	277.7	49.0
43	42.3	7.5	103	101.4	17.9	163	160.5	28.3	223	219.6	38.7	283	278.7	49.1
44	43.3	7.6	104	102.4	18.1	164	161.5	28.5	224	220.6	38.9	284	279.7	49.3
45	44.3	7.8	105	103.4	18.2	165	162.5	28.7	225	221.6	39.1	285	280.7	49.5
46	45.3	8.0	106	104.4	18.4	166	163.5	28.8	226	222.6	39.2	286	281.7	49.7
47	46.3	8.2	107	105.4	18.6	167	164.5	29.0	227	223.6	39.4	287	282.6	49.8
48	47.3	8.3	108	106.4	18.8	168	165.4	29.2	228	224.5	39.6	288	283.6	50.0
49	48.3	8.5	109	107.3	18.9	169	166.4	29.3	229	225.5	39.8	289	284.6	50.2
50	49.2	8.7	110	108.3	19.1	170	167.4	29.5	230	226.5	39.9	290	285.6	50.4
51	50.2	8.9	111	109.3	19.3	171	168.4	29.7	231	227.5	40.1	291	286.6	50.5
52	51.2	9.0	112	110.3	19.4	172	169.4	29.9	232	228.5	40.3	292	287.6	50.7
53	52.2	9.2	113	111.3	19.6	173	170.4	30.0	233	229.5	40.5	293	288.5	50.9
54	53.2	9.4	114	112.3	19.8	174	171.4	30.2	234	230.4	40.6	294	289.5	51.1
55	54.2	9.6	115	113.3	20.0	175	172.3	30.4	235	231.4	40.8	295	290.5	51.2
56	55.1	9.7	116	114.2	20.1	176	173.3	30.6	236	232.4	41.0	296	291.5	51.4
57	56.1	9.9	117	115.2	20.3	177	174.3	30.7	237	233.4	41.2	297	292.5	51.6
58	57.1	10.1	118	116.2	20.5	178	175.3	30.9	238	234.4	41.3	298	293.5	51.7
59	58.1	10.2	119	117.2	20.7	179	176.3	31.1	239	235.4	41.5	299	294.5	51.9
60	59.1	10.4	120	118.2	20.8	180	177.3	31.3	240	236.4	41.7	300	295.4	52.1
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 80 Degrees.

TABLE IX.

Difference of Latitude and Departure for 11 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.2	61	59.9	11.6	121	118.8	23.1	181	177.7	34.5	241	236.6	46.0
2	2.0	0.4	62	60.9	11.8	122	119.8	23.3	182	178.7	34.7	242	237.6	46.2
3	2.9	0.6	63	61.8	12.0	123	120.7	23.5	183	179.6	34.9	243	238.5	46.4
4	3.9	0.8	64	62.8	12.2	124	121.7	23.7	184	180.6	35.1	244	239.5	46.6
5	4.9	1.0	65	63.8	12.4	125	122.7	23.9	185	181.6	35.3	245	240.5	46.7
6	5.9	1.1	66	64.8	12.6	126	123.7	24.0	186	182.6	35.5	246	241.5	46.9
7	6.9	1.3	67	65.8	12.8	127	124.7	24.2	187	183.6	35.7	247	242.5	47.1
8	7.9	1.5	68	66.8	13.0	128	125.6	24.4	188	184.5	35.9	248	243.4	47.3
9	8.8	1.7	69	67.7	13.2	129	126.6	24.6	189	185.5	36.1	249	244.4	47.5
10	9.8	1.9	70	68.7	13.4	130	127.6	24.8	190	186.5	36.3	250	245.4	47.7
11	10.8	2.1	71	69.7	13.5	131	128.6	25.0	191	187.5	36.4	251	246.4	47.9
12	11.8	2.3	72	70.7	13.7	132	129.6	25.2	192	188.5	36.6	252	247.4	48.1
13	12.8	2.5	73	71.7	13.9	133	130.6	25.4	193	189.5	36.8	253	248.4	48.3
14	13.7	2.7	74	72.6	14.1	134	131.5	25.6	194	190.4	37.0	254	249.3	48.5
15	14.7	2.9	75	73.6	14.3	135	132.5	25.8	195	191.4	37.2	255	250.3	48.7
16	15.7	3.1	76	74.6	14.5	136	133.5	26.0	196	192.4	37.4	256	251.3	48.8
17	16.7	3.2	77	75.6	14.7	137	134.5	26.1	197	193.4	37.6	257	252.3	49.0
18	17.7	3.4	78	76.6	14.9	138	135.5	26.3	198	194.4	37.8	258	253.3	49.2
19	18.7	3.6	79	77.5	15.1	139	136.4	26.5	199	195.3	38.0	259	254.2	49.4
20	19.6	3.8	80	78.5	15.3	140	137.4	26.7	200	196.3	38.2	260	255.2	49.6
21	20.6	4.0	81	79.5	15.5	141	138.4	26.9	201	197.3	38.4	261	256.2	49.8
22	21.6	4.2	82	80.5	15.6	142	139.4	27.1	202	198.3	38.5	262	257.2	50.0
23	22.6	4.4	83	81.5	15.8	143	140.4	27.3	203	199.3	38.7	263	258.2	50.2
24	23.6	4.6	84	82.5	16.0	144	141.4	27.5	204	200.3	38.9	264	259.1	50.4
25	24.5	4.8	85	83.4	16.2	145	142.3	27.7	205	201.2	39.1	265	260.1	50.6
26	25.5	5.0	86	84.4	16.4	146	143.3	27.9	206	202.2	39.3	266	261.1	50.8
27	26.5	5.2	87	85.4	16.6	147	144.3	28.0	207	203.2	39.5	267	262.1	50.9
28	27.5	5.3	88	86.4	16.8	148	145.3	28.2	208	204.2	39.7	268	263.1	51.1
29	28.5	5.5	89	87.4	17.0	149	146.3	28.4	209	205.2	39.9	269	264.1	51.3
30	29.4	5.7	90	88.3	17.2	150	147.2	28.6	210	206.1	40.1	270	265.0	51.5
31	30.4	5.9	91	89.3	17.4	151	148.2	28.8	211	207.1	40.3	271	266.0	51.7
32	31.4	6.1	92	90.3	17.6	152	149.2	29.0	212	208.1	40.5	272	267.0	51.9
33	32.4	6.3	93	91.3	17.7	153	150.2	29.2	213	209.1	40.6	273	268.0	52.1
34	33.4	6.5	94	92.3	17.9	154	151.2	29.4	214	210.1	40.8	274	269.0	52.3
35	34.4	6.7	95	93.3	18.1	155	152.2	29.6	215	211.0	41.0	275	269.9	52.5
36	35.3	6.9	96	94.2	18.3	156	153.1	29.8	216	212.0	41.2	276	270.9	52.7
37	36.3	7.1	97	95.2	18.5	157	154.1	30.0	217	213.0	41.4	277	271.9	52.9
38	37.3	7.3	98	96.2	18.7	158	155.1	30.1	218	214.0	41.6	278	272.9	53.0
39	38.3	7.4	99	97.2	18.9	159	156.1	30.3	219	215.0	41.8	279	273.9	53.2
40	39.3	7.6	100	98.2	19.1	160	157.1	30.5	220	216.0	42.0	280	274.9	53.4
41	40.2	7.8	101	99.1	19.3	161	158.0	30.7	221	216.9	42.2	281	275.8	53.6
42	41.2	8.0	102	100.1	19.5	162	159.0	30.9	222	217.9	42.4	282	276.8	53.8
43	42.2	8.2	103	101.1	19.7	163	160.0	31.1	223	218.9	42.6	283	277.8	54.0
44	43.2	8.4	104	102.1	19.8	164	161.0	31.3	224	219.9	42.7	284	278.8	54.2
45	44.2	8.6	105	103.1	20.0	165	162.0	31.5	225	220.9	42.9	285	279.8	54.4
46	45.2	8.8	106	104.1	20.2	166	163.0	31.7	226	221.8	43.1	286	280.7	54.6
47	46.1	9.0	107	105.0	20.4	167	163.9	31.9	227	222.8	43.3	287	281.7	54.8
48	47.1	9.2	108	106.0	20.6	168	164.9	32.1	228	223.8	43.5	288	282.7	55.0
49	48.1	9.3	109	107.0	20.8	169	165.9	32.2	229	224.8	43.7	289	283.7	55.1
50	49.1	9.5	110	108.0	21.0	170	166.9	32.4	230	225.8	43.9	290	284.7	55.3
51	50.1	9.7	111	109.0	21.2	171	167.9	32.6	231	226.8	44.1	291	285.7	55.5
52	51.0	9.9	112	109.9	21.4	172	168.8	32.8	232	227.7	44.3	292	286.6	55.7
53	52.0	10.1	113	110.9	21.6	173	169.8	33.0	233	228.7	44.5	293	287.6	55.9
54	53.0	10.3	114	111.9	21.8	174	170.8	33.2	234	229.7	44.6	294	288.6	56.1
55	54.0	10.5	115	112.9	21.9	175	171.8	33.4	235	230.7	44.8	295	289.6	56.3
56	55.0	10.7	116	113.9	22.1	176	172.8	33.6	236	231.7	45.0	296	290.6	56.5
57	56.0	10.9	117	114.9	22.3	177	173.7	33.8	237	232.6	45.2	297	291.5	56.7
58	56.9	11.1	118	115.8	22.5	178	174.7	34.0	238	233.6	45.4	298	292.5	56.9
59	57.9	11.3	119	116.8	22.7	179	175.7	34.2	239	234.6	45.6	299	293.5	57.1
60	58.9	11.4	120	117.8	22.9	180	176.7	34.3	240	235.6	45.8	300	294.5	57.2
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 79 Degrees.

TABLE IX.

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Difference of Latitude and Departure for 12 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.2	61	59.7	12.7	121	118.4	25.2	181	177.0	37.6	241	235.7	50.1
2	2.0	0.4	62	60.6	12.9	122	119.3	25.4	182	178.0	37.8	242	236.7	50.3
3	2.9	0.6	63	61.6	13.1	123	120.3	25.6	183	179.0	38 0	243	237.7	50.5
4	3.9	0.8	64	62.6	13.3	124	121.3	25.8	184	180.0	38.3	244	238.7	50.7
5	4.9	1.0	65	63.6	13.5	125	122.3	26.0	185	181.0	38.5	245	239.6	50.9
6	5.9	1.2	66	64.6	13.7	126	123.2	26.2	186	181.9	38.7	246	240.6	51.1
7	6.8	1.5	67	65.5	13.9	127	124.2	26.4	187	182.9	38.9	247	241.6	51.4
8	7.8	1.7	68	66.5	14.1	128	125.2	26.6	188	183.9	39.1	248	242.6	51.6
9	8.8	1.9	69	67.5	14.3	129	126.2	26.8	189	184.9	39.3	249	243.6	51.8
10	9.8	2.1	70	68.5	14.6	130	127.2	27.0	190	185.8	39.5	250	244.5	52.0
11	10.8	2.3	71	69.4	14.8	131	128.1	27.2	191	186.8	39.7	251	245.5	52.2
12	11.7	2.5	72	70.4	15.0	132	129.1	27.4	192	187.8	39.9	252	246.5	52.4
13	12.7	2.7	73	71.4	15.2	133	130.1	27.7	193	188.8	40.1	253	247.5	52.6
14	13.7	2.9	74	72.4	15.4	134	131.1	27.9	194	189.8	40.3	254	248.4	52.8
15	14.7	3.1	75	73.4	15.6	135	132.0	28.1	195	190.7	40.5	255	249.4	53.0
16	15.7	3.3	76	74.3	15.8	136	133.0	28.3	196	191.7	40.8	256	250.4	53.2
17	16.6	3.5	77	75.3	16.0	137	134.0	28.5	197	192.7	41.0	257	251.4	53.4
18	17.6	3.7	78	76.3	16.2	138	135.0	28.7	198	193.7	41.2	258	252.4	53.6
19	18.6	4.0	79	77.3	16.4	139	136.0	28.9	199	194.7	41.4	259	253.3	53.8
20	19.6	4.2	80	78.3	16.6	140	136.9	29.1	200	195.6	41.6	260	254.3	54.1
21	20.5	4.4	81	79.2	16.8	141	137.9	29.3	201	196.6	41.8	261	255.3	54.3
22	21.5	4.6	82	80.2	17.0	142	138.9	29.5	202	197.6	42.0	262	256.3	54.5
23	22.5	4.8	83	81.2	17.3	143	139.9	29.7	203	198.6	42.2	263	257.3	54.7
24	23.5	5.0	84	82.2	17.5	144	140.9	29.9	204	199.5	42.4	264	258.2	54.9
25	24.5	5.2	85	83.1	17.7	145	141.8	30.1	205	200.5	42.6	265	259.2	55.1
26	25.4	5.4	86	84.1	17.9	146	142.8	30.4	206	201.5	42.8	266	260.2	55.3
27	26.4	5.6	87	85.1	18.1	147	143.8	30.6	207	202.5	43.0	267	261.2	55.5
28	27.4	5.8	88	86.1	18.3	148	144.8	30.8	208	203.5	43.2	268	262.1	55.7
29	28.4	6.0	89	87.1	18.5	149	145.7	31.0	209	204.4	43.5	269	263.1	55.9
30	29.3	6.2	90	88.0	18.7	150	146.7	31.2	210	205.4	43.7	270	264.1	56.1
31	30.3	6.4	91	89.0	18.9	151	147.7	31.4	211	206.4	43.9	271	265.1	56.3
32	31.3	6.7	92	90.0	19.1	152	148.7	31.6	212	207.4	44.1	272	266.1	56.6
33	32.3	6.9	93	91.0	19.3	153	149.7	31.8	213	208.3	44.3	273	267.0	56.8
34	33.3	7.1	94	91.9	19.5	154	150.6	32.0	214	209.3	44.5	274	268.0	57.0
35	34.2	7.3	95	92.9	19.8	155	151.6	32.2	215	210.3	44.7	275	269.0	57.2
36	35.2	7.5	96	93.9	20.0	156	152.6	32.4	216	211.3	44.9	276	270.0	57.4
37	36.2	7.7	97	94.9	20.2	157	153.6	32.6	217	212.3	45.1	277	270.9	57.6
38	37.2	7.9	98	95.9	20.4	158	154.5	32.9	218	213.2	45.3	278	271.9	57.8
39	38.1	8.1	99	96.8	20.6	159	155.5	33.1	219	214.2	45.5	279	272 9	58.0
40	39.1	8.3	100	97.8	20.8	160	156.5	33.3	220	215.2	45.7	280	273.9	58.2
41	40.1	8.5	101	98.8	21.0	161	157.5	33.5	221	216.2	45.9	281	274.9	58.4
42	41.1	8.7	102	99.8	21.2	162	158.5	33.7	222	217.1	46.2	282	275.8	58.6
43	42.1	8.9	103	100.7	21.4	163	159.4	33.9	223	218.1	46.4	283	276.8	58.8
44	43.0	9.1	104	101.7	21.6	164	160.4	34.1	224	219.1	46.6	284	277.8	59.0
45	44.0	9.4	105	102.7	21.8	165	161.4	34.3	225	220.1	46.8	285	278.8	59.3
46	45.0	9.6	106	103.7	22.0	166	162.4	34.5	226	221.1	47.0	286	279.8	59.5
47	46.0	9.8	107	104.7	22.2	167	163.4	34.7	227	222.0	47.2	287	280.7	59.7
48	47.0	10.0	108	105.7	22.5	168	164.3	34.9	228	223.0	47.4	288	281.7	59.9
49	47.9	10.2	109	106.6	22.7	169	165.3	35.1	229	224.0	47.6	289	282.7	60.1
50	48.9	10.4	110	107.6	22.9	170	166.3	35.3	230	225.0	47.8	290	283.7	60.3
51	49.9	10.6	111	108.6	23.1	171	167.3	35.6	231	226.0	48.0	291	284.6	60.5
52	50.9	10.8	112	109.6	23.3	172	168.2	35.8	232	226.9	48.2	292	285.6	60.7
53	51.8	11.0	113	110.5	23.5	173	169.2	36.0	233	227.9	48.4	293	286.6	60.9
54	52.8	11.2	114	111.5	23.7	174	170.2	36.2	234	228.9	48.7	294	287.6	61.1
55	53.8	11.4	115	112.5	23.9	175	171.2	36.4	235	229.9	48.9	295	288.6	61.3
56	54.8	11.6	116	113.5	24.1	176	172.2	36.6	236	230.8	49.1	296	289.5	61.5
57	55.8	11.9	117	114.4	24.3	177	173.1	36.8	237	231.8	49.3	297	290.5	61.7
58	56.7	12.1	118	115.4	24.5	178	174.1	37.0	238	232.8	49.5	298	291.5	62.0
59	57.7	12.3	119	116.4	24.7	179	175.1	37.2	239	233.8	49.7	299	292.5	62.2
60	58.7	12.5	120	117.4	24.9	180	176.1	37.4	240	234.8	49.9	300	293.4	62.4
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 78 Degrees.

TABLE IX.

Difference of Latitude and Departure for 13 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.2	61	59.4	13.7	121	117.9	27.2	181	176.4	40.7	241	234.8	54.2			
2	1.9	0.4	62	60.4	13.9	122	118.9	27.4	182	177.3	40.9	242	235.8	54.4			
3	2.9	0.7	63	61.4	14.2	123	119.8	27.7	183	178.3	41.2	243	236.8	54.7			
4	3.9	0.9	64	62.4	14.4	124	120.8	27.9	184	179.3	41.4	244	237.7	54.9			
5	4.9	1.1	65	63.3	14.6	125	121.8	28.1	185	180.3	41.6	245	238.7	55.1			
6	5.8	1.3	66	64.3	14.8	126	122.8	28.3	186	181.2	41.8	246	239.7	55.3			
7	6.8	1.6	67	65.3	15.1	127	123.7	28.6	187	182.2	42.1	247	240.7	55.6			
8	7.8	1.8	68	66.3	15.3	128	124.7	28.8	188	183.2	42.3	248	241.6	55.8			
9	8.8	2.0	69	67.2	15.5	129	125.7	29.0	189	184.2	42.5	249	242.6	56.0			
10	9.7	2.2	70	68.2	15.7	130	126.7	29.2	190	185.1	42.7	250	243.6	56.2			
11	10.7	2.5	71	69.2	16.0	131	127.6	29.5	191	186.1	43.0	251	244.6	56.5			
12	11.7	2.7	72	70.2	16.2	132	128.6	29.7	192	187.1	43.2	252	245.5	56.7			
13	12.7	2.9	73	71.1	16.4	133	129.6	29.9	193	188.1	43.4	253	246.5	56.9			
14	13.6	3.1	74	72.1	16.6	134	130.6	30.1	194	189.0	43.6	254	247.5	57.1			
15	14.6	3.4	75	73.1	16.9	135	131.5	30.4	195	190.0	43.9	255	248.5	57.4			
16	15.6	3.6	76	74.1	17.1	136	132.5	30.6	196	191.0	44.1	256	249.4	57.6			
17	16.6	3.8	77	75.0	17.3	137	133.5	30.8	197	192.0	44.3	257	250.4	57.8			
18	17.5	4.0	78	76.0	17.5	138	134.5	31.0	198	192.9	44.5	258	251.4	58.0			
19	18.5	4.3	79	77.0	17.8	139	135.4	31.3	199	193.9	44.8	259	252.4	58.3			
20	19.5	4.5	80	77.9	18.0	140	136.4	31.5	200	194.9	45.0	260	253.3	58.5			
21	20.5	4.7	81	78.9	18.2	141	137.4	31.7	201	195.8	45.2	261	254.3	58.7			
22	21.4	4.9	82	79.9	18.4	142	138.4	31.9	202	196.8	45.4	262	255.3	58.9			
23	22.4	5.2	83	80.9	18.7	143	139.3	32.2	203	197.8	45.7	263	256.3	59.2			
24	23.4	5.4	84	81.8	18.9	144	140.3	32.4	204	198.8	45.9	264	257.2	59.4			
25	24.4	5.6	85	82.8	19.1	145	141.3	32.6	205	199.7	46.1	265	258.2	59.6			
26	25.3	5.8	86	83.8	19.3	146	142.3	32.8	206	200.7	46.3	266	259.2	59.8			
27	26.3	6.1	87	84.8	19.6	147	143.2	33.1	207	201.7	46.6	267	260.2	60.1			
28	27.3	6.3	88	85.7	19.8	148	144.2	33.3	208	202.7	46.8	268	261.1	60.3			
29	28.3	6.5	89	86.7	20.0	149	145.2	33.5	209	203.6	47.0	269	262.1	60.5			
30	29.2	6.7	90	87.7	20.2	150	146.2	33.7	210	204.6	47.2	270	263.1	60.7			
31	30.2	7.0	91	88.7	20.5	151	147.1	34.0	211	205.6	47.5	271	264.1	61.0			
32	31.2	7.2	92	89.6	20.7	152	148.1	34.2	212	206.6	47.7	272	265.0	61.2			
33	32.2	7.4	93	90.6	20.9	153	149.1	34.4	213	207.5	47.9	273	266.0	61.4			
34	33.1	7.6	94	91.6	21.1	154	150.1	34.6	214	208.5	48.1	274	267.0	61.6			
35	34.1	7.9	95	92.6	21.4	155	151.0	34.9	215	209.5	48.4	275	268.0	61.9			
36	35.1	8.1	96	93.5	21.6	156	152.0	35.1	216	210.5	48.6	276	268.9	62.1			
37	36.1	8.3	97	94.5	21.8	157	153.0	35.3	217	211.4	48.8	277	269.9	62.3			
38	37.0	8.5	98	95.5	22.0	158	154.0	35.5	218	212.4	49.0	278	270.9	62.5			
39	38.0	8.8	99	96.5	22.3	159	154.9	35.8	219	213.4	49.3	279	271.8	62.8			
40	39.0	9.0	100	97.4	22.5	160	155.9	36.0	220	214.4	49.5	280	272.8	63.0			
41	39.9	9.2	101	98.4	22.7	161	156.9	36.2	221	215.3	49.7	281	273.8	63.2			
42	40.9	9.4	102	99.4	22.9	162	157.8	36.4	222	216.3	49.9	282	274.8	63.4			
43	41.9	9.7	103	100.4	23.2	163	158.8	36.7	223	217.3	50.2	283	275.7	63.7			
44	42.9	9.9	104	101.3	23.4	164	159.8	36.9	224	218.3	50.4	284	276.7	63.9			
45	43.8	10.1	105	102.3	23.6	165	160.8	37.1	225	219.2	50.6	285	277.7	64.1			
46	44.8	10.3	106	103.3	23.8	166	161.7	37.3	226	220.2	50.8	286	278.7	64.3			
47	45.8	10.6	107	104.3	24.1	167	162.7	37.6	227	221.2	51.1	287	279.6	64.6			
48	46.8	10.8	108	105.2	24.3	168	163.7	37.8	228	222.2	51.3	288	280.6	64.8			
49	47.7	11.0	109	106.2	24.5	169	164.7	38.0	229	223.1	51.5	289	281.6	65.0			
50	48.7	11.2	110	107.2	24.7	170	165.6	38.2	230	224.1	51.7	290	282.6	65.2			
51	49.7	11.5	111	108.2	25.0	171	166.6	38.5	231	225.1	52.0	291	283.5	65.5			
52	50.7	11.7	112	109.1	25.2	172	167.6	38.7	232	226.1	52.2	292	284.5	65.7			
53	51.6	11.9	113	110.1	25.4	173	168.6	38.9	233	227.0	52.4	293	285.5	65.9			
54	52.6	12.1	114	111.1	25.6	174	169.5	39.1	234	228.0	52.6	294	286.5	66.1			
55	53.6	12.4	115	112.1	25.9	175	170.5	39.4	235	229.0	52.9	295	287.4	66.4			
56	54.6	12.6	116	113.0	26.1	176	171.5	39.6	236	230.0	53.1	296	288.4	66.6			
57	55.5	12.8	117	114.0	26.3	177	172.5	39.8	237	230.9	53.3	297	289.4	66.8			
58	56.5	13.0	118	115.0	26.5	178	173.4	40.0	238	231.9	53.5	298	290.4	67.0			
59	57.5	13.3	119	116.0	26.8	179	174.4	40.3	239	232.9	53.8	299	291.3	67.3			
60	58.5	13.5	120	116.9	27.0	180	175.4	40.5	240	233.8	54.0	300	292.3	67.5			
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX. 91

Difference of Latitude and Departure for 14 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.2	61	59.2	14.8	121	117.4	29.3	181	175.6	43.8	241	233.8	58.3
2	1.9	0.5	62	60.2	15.0	122	118.4	29.5	182	176.6	44.0	242	234.8	58.5
3	2.9	0.7	63	61.1	15.2	123	119.3	29.8	183	177.6	44.3	243	235.8	58.8
4	3.9	1.0	64	62.1	15.5	124	120.3	30.0	184	178.5	44.5	244	236.8	59.0
5	4.9	1.2	65	63.1	15.7	125	121.3	30.2	185	179.5	44.8	245	237.7	59.3
6	5.8	1.5	66	64.0	16.0	126	122.3	30.5	186	180.5	45.0	246	238.7	59.5
7	6.8	1.7	67	65.0	16.2	127	123.2	30.7	187	181.4	45.2	247	239.7	59.8
8	7.8	1.9	68	66.0	16.5	128	124.2	31.0	188	182.4	45.5	248	240.6	60.0
9	8.7	2.2	69	67.0	16.7	129	125.2	31.2	189	183.4	45.7	249	241.6	60.2
10	9.7	2.4	70	67.9	16.9	130	126.1	31.4	190	184.4	46.0	250	242.6	60.5
11	10.7	2.7	71	68.9	17.2	131	127.1	31.7	191	185.3	46.2	251	243.5	60.7
12	11.6	2.9	72	69.9	17.4	132	128.1	31.9	192	186.3	46.4	252	244.5	61.0
13	12.6	3.1	73	70.8	17.7	133	129.0	32.2	193	187.3	46.7	253	245.5	61.2
14	13.6	3.4	74	71.8	17.9	134	130.0	32.4	194	188.2	46.9	254	246.5	61.4
15	14.6	3.6	75	72.8	18.1	135	131.0	32.7	195	189.2	47.2	255	247.4	61.7
16	15.5	3.9	76	73.7	18.4	136	132.0	32.9	196	190.2	47.4	256	248.4	61.9
17	16.5	4.1	77	74.7	18.6	137	132.9	33.1	197	191.1	47.7	257	249.4	62.2
18	17.5	4.4	78	75.7	18.9	138	133.9	33.4	198	192.1	47.9	258	250.3	62.4
19	18.4	4.6	79	76.7	19.1	139	134.9	33.6	199	193.1	48.1	259	251.3	62.7
20	19.4	4.8	80	77.6	19.4	140	135.8	33.9	200	194.1	48.4	260	252.3	62.9
21	20.4	5.1	81	78.6	19.6	141	136.8	34.1	201	195.0	48.6	261	253.2	63.1
22	21.3	5.3	82	79.6	19.8	142	137.8	34.4	202	196.0	48.9	262	254.2	63.4
23	22.3	5.6	83	80.5	20.1	143	138.8	34.6	203	197.0	49.1	263	255.2	63.6
24	23.3	5.8	84	81.5	20.3	144	139.7	34.8	204	197.9	49.4	264	256.2	63.9
25	24.3	6.0	85	82.5	20.6	145	140.7	35.1	205	198.9	49.6	265	257.1	64.1
26	25.2	6.3	86	83.4	20.8	146	141.7	35.3	206	199.9	49.8	266	258.1	64.4
27	26.2	6.5	87	84.4	21.0	147	142.6	35.6	207	200.9	50.1	267	259.1	64.6
28	27.2	6.8	88	85.4	21.3	148	143.6	35.8	208	201.8	50.3	268	260.0	64.8
29	28.1	7.0	89	86.4	21.5	149	144.6	36.0	209	202.8	50.6	269	261.0	65.1
30	29.1	7.3	90	87.3	21.8	150	145.5	36.3	210	203.8	50.8	270	262.0	65.3
31	30.1	7.5	91	88.3	22.0	151	146.5	36.5	211	204.7	51.0	271	263.0	65.6
32	31.0	7.7	92	89.3	22.3	152	147.5	36.8	212	205.7	51.3	272	263.9	65.8
33	32.0	8.0	93	90.2	22.5	153	148.5	37.0	213	206.7	51.5	273	264.9	66.0
34	33.0	8.2	94	91.2	22.7	154	149.4	37.3	214	207.6	51.8	274	265.9	66.3
35	34.0	8.5	95	92.2	23.0	155	150.4	37.5	215	208.6	52.0	275	266.8	66.5
36	34.9	8.7	96	93.1	23.2	156	151.4	37.7	216	209.6	52.3	276	267.8	66.8
37	35.9	9.0	97	94.1	23.5	157	152.3	38.0	217	210.6	52.5	277	268.8	67.0
38	36.9	9.2	98	95.1	23.7	158	153.3	38.2	218	211.5	52.7	278	269.7	67.3
39	37.8	9.4	99	96.1	24.0	159	154.3	38.5	219	212.5	53.0	279	270.7	67.5
40	38.8	9.7	100	97.0	24.2	160	155.2	38.7	220	213.5	53.2	280	271.7	67.7
41	39.8	9.9	101	98.0	24.4	161	156.2	38.9	221	214.4	53.5	281	272.7	68.0
42	40.8	10.2	102	99.0	24.7	162	157.2	39.2	222	215.4	53.7	282	273.6	68.2
43	41.7	10.4	103	99.9	24.9	163	158.2	39.4	223	216.4	53.9	283	274.6	68.5
44	42.7	10.6	104	100.9	25.2	164	159.1	39.7	224	217.3	54.2	284	275.6	68.7
45	43.7	10.9	105	101.9	25.4	165	160.1	39.9	225	218.3	54.4	285	276.5	68.9
46	44.6	11.1	106	102.9	25.6	166	161.1	40.2	226	219.3	54.7	286	277.5	69.2
47	45.6	11.4	107	103.8	25.9	167	162.0	40.4	227	220.3	54.9	287	278.5	69.4
48	46.6	11.6	108	104.8	26.1	168	163.0	40.6	228	221.2	55.2	288	279.4	69.7
49	47.5	11.9	109	105.8	26.4	169	164.0	40.9	229	222.2	55.4	289	280.4	69.9
50	48.5	12.1	110	106.7	26.6	170	165.0	41.1	230	223.2	55.6	290	281.4	70.2
51	49.5	12.3	111	107.7	26.9	171	165.9	41.4	231	224.1	55.9	291	282.4	70.4
52	50.5	12.6	112	108.7	27.1	172	166.9	41.6	232	225.1	56.1	292	283.3	70.6
53	51.4	12.8	113	109.6	27.3	173	167.9	41.9	233	226.1	56.4	293	284.3	70.9
54	52.4	13.1	114	110.6	27.6	174	168.8	42.1	234	227.0	56.6	294	285.3	71.1
55	53.4	13.3	115	111.6	27.8	175	169.8	42.3	235	228.0	56.9	295	286.2	71.4
56	54.3	13.5	116	112.6	28.1	176	170.8	42.6	236	229.0	57.1	296	287.2	71.6
57	55.3	13.8	117	113.5	28.3	177	171.7	42.8	237	230.0	57.3	297	288.2	71.9
58	56.3	14.0	118	114.5	28.5	178	172.7	43.1	238	230.9	57.6	298	289.1	72.1
59	57.2	14.3	119	115.5	28.8	179	173.7	43.3	239	231.9	57.8	299	290.1	72.3
60	58.2	14.5	120	116.4	29.0	180	174.7	43.5	240	232.9	58.1	300	291.1	72.6
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 15 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.3	61	58.9	15.8	121	116.9	31.3	181	174.8	46.8	241	232.8	62.4
2	1.9	0.5	62	59.9	16.0	122	117.8	31.6	182	175.8	47.1	242	233.8	62.6
3	2.9	0.8	63	60.9	16.3	123	118.8	31.8	183	176.8	47.4	243	234.7	62.9
4	3.9	1.0	64	61.8	16.6	124	119.8	32.1	184	177.7	47.6	244	235.7	63.2
5	4.8	1.3	65	62.8	16.8	125	120.7	32.4	185	178.7	47.9	245	236.7	63.4
6	5.8	1.6	66	63.8	17.1	126	121.7	32.6	186	179.7	48.1	246	237.6	63.7
7	6.8	1.8	67	64.7	17.3	127	122.7	32.9	187	180.6	48.4	247	238.6	63.9
8	7.7	2.1	68	65.7	17.6	128	123.6	33.1	188	181.6	48.7	248	239.5	64.2
9	8.7	2.3	69	66.6	17.9	129	124.6	33.4	189	182.6	48.9	249	240.5	64.4
10	9.7	2.6	70	67.6	18.1	130	125.6	33.6	190	183.5	49.2	250	241.5	64.7
11	10.6	2.8	71	68.6	18.4	131	126.5	33.9	191	184.5	49.4	251	242.4	65.0
12	11.6	3.1	72	69.5	18.6	132	127.5	34.2	192	185.5	49.7	252	243.4	65.2
13	12.6	3.4	73	70.5	18.9	133	128.5	34.4	193	186.4	50.0	253	244.4	65.5
14	13.5	3.6	74	71.5	19.2	134	129.4	34.7	194	187.4	50.2	254	245.3	65.7
15	14.5	3.9	75	72.4	19.4	135	130.4	34.9	195	188.4	50.5	255	246.3	66.0
16	15.5	4.1	76	73.4	19.7	136	131.4	35.2	196	189.3	50 7	256	247.3	66.3
17	16.4	4.4	77	74.4	19.9	137	132.3	35.5	197	190.3	51.0	257	248.2	66.5
18	17.4	4.7	78	75.3	20.2	138	133.3	35.7	198	191.3	51.2	258	249.2	66.8
19	18.4	4.9	79	76.3	20.4	139	134.3	36.0	199	192.2	51.5	259	250.2	67.0
20	19.3	5.2	80	77.3	20.7	140	135.2	36.2	200	193.2	51.8	260	251.1	67.3
21	20.3	5.4	81	78.2	21.0	141	136.2	36.5	201	194.2	52.0	261	252.1	67.6
22	21.3	5.7	82	79.2	21.2	142	137.2	36.8	202	195.1	52.3	262	253.1	67.8
23	22.2	6.0	83	80.2	21.5	143	138.1	37.0	203	196.1	52.5	263	254.0	68.1
24	23.2	6.2	84	81.1	21.7	144	139.1	37.3	204	197.0	52.8	264	255.0	68.3
25	24.1	6.5	85	82.1	22.0	145	140.1	37.5	205	198.0	53.1	265	256.0	68.6
26	25.1	6.7	86	83.1	22.3	146	141.0	37.8	206	199.0	53.3	266	256.9	68.8
27	26.1	7.0	87	84.0	22.5	147	142.0	38.0	207	199.9	53.6	267	257.9	69.1
28	27.0	7.2	88	85.0	22.8	148	143.0	38.3	208	200.9	53.8	268	258.9	69.4
29	28.0	7.5	89	86.0	23.0	149	143.9	38.6	209	201.9	54.1	269	259.8	69.6
30	29.0	7.8	90	86.9	23.3	150	144.9	38.8	210	202.8	54.4	270	260.8	69.9
31	29.9	8.0	91	87.9	23.6	151	145.9	39.1	211	203.8	54.6	271	261.8	70.1
32	30.9	8.3	92	88.9	23.8	152	146.8	39.3	212	204.8	54.9	272	262.7	70.4
33	31.9	8.5	93	89.8	24.1	153	147.8	39.6	213	205.7	55.1	273	263.7	70.7
34	32.8	8.8	94	90.8	24.3	154	148.8	39.9	214	206.7	55.4	274	264.7	70.9
35	33.8	9.1	95	91.8	24.6	155	149.7	40.1	215	207.7	55.6	275	265.6	71.2
36	34.8	9.3	96	92.7	24.8	156	150.7	40.4	216	208.6	55.9	276	266.6	71.4
37	35.7	9.6	97	93.7	25.1	157	151.7	40.6	217	209.6	56.2	277	267.6	71.7
38	36.7	9.8	98	94.7	25.4	158	152.6	40.9	218	210.6	56.4	278	268.5	72.0
39	37.7	10.1	99	95.6	25.6	159	153.6	41.2	219	211.5	56.7	279	269.5	72.2
40	38.6	10.4	100	96.6	25.9	160	154.5	41.4	220	212.5	56.9	280	270.5	72.5
41	39.6	10.6	101	97.6	26.1	161	155.5	41.7	221	213.5	57.2	281	271.4	72.7
42	40.6	10.9	102	98.5	26.4	162	156.5	41.9	222	214.4	57.5	282	272.4	73.0
43	41.5	11.1	103	99.5	26.7	163	157.4	42.2	223	215.4	57.7	283	273.4	73.2
44	42.5	11.4	104	100.5	26.9	164	158.4	42.4	224	216.4	58.0	284	274.3	73.5
45	43.5	11.6	105	101.4	27.2	165	159.4	42.7	225	217.3	58.2	285	275.3	73.8
46	44.4	11.9	106	102.4	27.4	166	160.3	43.0	226	218.3	58.5	286	276.3	74.0
47	45.4	12.2	107	103.4	27.7	167	161.3	43.2	227	219.3	58.8	287	277.2	74.3
48	46.4	12.4	108	104.3	28.0	168	162.3	43.5	228	220.2	59.0	288	278.2	74.5
49	47.3	12.7	109	105.3	28.2	169	163.2	43.7	229	221.2	59.3	289	279.2	74.8
50	48.3	12.9	110	106.3	28.5	170	164.2	44.0	230	222.2	59.5	290	280.1	75.1
51	49.3	13.2	111	107.2	28.7	171	165.2	44.3	231	223.1	59.8	291	281.1	75.3
52	50.2	13.5	112	108.2	29.0	172	166.1	44.5	232	224.1	60.0	292	282.1	75.6
53	51.2	13.7	113	109.1	29.2	173	167.1	44.8	233	225.1	60.3	293	283.0	75.8
54	52.2	14.0	114	110.1	29.5	174	168.1	45.0	234	226.0	60.6	294	284.0	76.1
55	53.1	14.2	115	111.1	29.8	175	169.0	45.3	235	227.0	60.8	295	284.9	76.4
56	54.1	14.5	116	112.0	30.0	176	170.0	45.6	236	228.0	61.1	296	285.9	76.6
57	55.1	14.8	117	113.0	30.3	177	171.0	45.8	237	228.9	61.3	297	286.9	76.9
58	56.0	15.0	118	114.0	30.5	178	171.9	46.1	238	229.9	61.6	298	287.8	77.1
59	57.0	15.3	119	114.9	30.8	179	172.9	46.3	239	230.9	61.9	299	288.8	77.4
60	58.0	15.5	120	115.9	31.1	180	173.9	46.6	240	231.8	62.1	300	289.8	77.6
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 75 Degrees.

TABLE IX. 93

Difference of Latitude and Departure for 16 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.3	61	58.6	16.8	121	116.3	33.4	181	174.0	49.9	241	231.7	66.4
2	1.9	0.6	62	59.6	17.1	122	117.3	33.6	182	174.9	50.2	242	232.6	66.7
3	2.9	0.8	63	60.6	17.4	123	118.2	33.9	183	175.9	50.4	243	233.6	67.0
4	3.8	1.1	64	61.5	17.6	124	119.2	34.2	184	176.9	50.7	244	234.5	67.3
5	4.8	1.4	65	62.5	17.9	125	120.2	34.5	185	177.8	51.0	245	235.5	67.5
6	5.8	1.7	66	63.4	18.2	126	121.1	34.7	186	178.8	51.3	246	236.5	67.8
7	6.7	1.9	67	64.4	18.5	127	122.1	35.0	187	179.8	51.5	247	237.4	68.1
8	7.7	2.2	68	65.4	18.7	128	123.0	35.3	188	180.7	51.8	248	238.4	68.4
9	8.7	2.5	69	66.3	19.0	129	124.0	35.6	189	181.7	52.1	249	239.4	68.6
10	9.6	2.8	70	67.3	19.3	130	125.0	35.8	190	182.6	52.4	250	240.3	68.9
11	10.6	3.0	71	68.2	19.6	131	125.9	36.1	191	183.6	52.6	251	241.3	69.2
12	11.5	3.3	72	69.2	19.8	132	126.9	36.4	192	184.6	52.9	252	242.2	69.5
13	12.5	3.6	73	70.2	20.1	133	127.8	36.7	193	185.5	53.2	253	243.2	69.7
14	13.5	3.9	74	71.1	20.4	134	128.8	36.9	194	186.5	53.5	254	244.2	70.0
15	14.4	4.1	75	72.1	20.7	135	129.8	37.2	195	187.4	53.7	255	245.1	70.3
16	15.4	4.4	76	73.1	20.9	136	130.7	37.5	196	188.4	54.0	256	246.1	70.6
17	16.3	4.7	77	74.0	21.2	137	131.7	37.8	197	189.4	54.3	257	247.0	70.8
18	17.3	5.0	78	75.0	21.5	138	132.7	38.0	198	190.3	54.6	258	248.0	71.1
19	18.3	5.2	79	75.9	21.8	139	133.6	38.3	199	191.3	54.9	259	249.0	71.4
20	19.2	5.5	80	76.9	22.1	140	134.6	38.6	200	192.3	55.1	260	249.9	71.7
21	20.2	5.8	81	77.9	22.3	141	135.5	38.9	201	193.2	55.4	261	250.9	71.9
22	21.1	6.1	82	78.8	22.6	142	136.5	39.1	202	194.2	55.7	262	251.9	72.2
23	22.1	6.3	83	79.8	22.9	143	137.5	39.4	203	195.1	56.0	263	252.8	72.5
24	23.1	6.6	84	80.7	23.2	144	138.4	39.7	204	196.1	56.2	264	253.8	72.8
25	24.0	6.9	85	81.7	23.4	145	139.4	40.0	205	197.1	56.5	265	254.7	73.0
26	25.0	7.2	86	82.7	23.7	146	140.3	40.2	206	198.0	56.8	266	255.7	73.3
27	26.0	7.4	87	83.6	24.0	147	141.3	40.5	207	199.0	57.1	267	256.7	73.6
28	26.9	7.7	88	84.6	24.3	148	142.3	40.8	208	199.9	57.3	268	257.6	73.9
29	27.9	8.0	89	85.6	24.5	149	143.2	41.1	209	200.9	57.6	269	258.6	74.1
30	28.8	8.3	90	86.5	24.8	150	144.2	41.3	210	201.9	57.9	270	259.5	74.4
31	29.8	8.5	91	87.5	25.1	151	145.2	41.6	211	202.8	58.2	271	260.5	74.7
32	30.8	8.8	92	88.4	25.4	152	146.1	41.9	212	203.8	58.4	272	261.5	75.0
33	31.7	9.1	93	89.4	25.6	153	147.1	42.2	213	204.7	58.7	273	262.4	75.2
34	32.7	9.4	94	90.4	25.9	154	148.0	42.4	214	205.7	59.0	274	263.4	75.5
35	33.6	9.6	95	91.3	26.2	155	149.0	42.7	215	206.7	59.3	275	264.3	75.8
36	34.6	9.9	96	92.3	26.5	156	150.0	43.0	216	207.6	59.5	276	265.3	76.1
37	35.6	10.2	97	93.2	26.7	157	150.9	43.3	217	208.6	59.8	277	266.3	76.4
38	36.5	10.5	98	94.2	27.0	158	151.9	43.6	218	209.6	60.1	278	267.2	76.6
39	37.5	10.7	99	95.2	27.3	159	152.8	43.8	219	210.5	60.4	279	268.2	76.9
40	38.5	11.0	100	96.1	27.6	160	153.8	44.1	220	211.5	60.6	280	269.2	77.2
41	39.4	11.3	101	97.1	27.8	161	154.8	44.4	221	212.4	60.9	281	270.1	77.5
42	40.4	11.6	102	98.0	28.1	162	155.7	44.7	222	213.4	61.2	282	271.1	77.7
43	41.3	11.9	103	99.0	28.4	163	156.7	44.9	223	214.4	61.5	283	272.0	78.0
44	42.3	12.1	104	100.0	28.7	164	157.6	45.2	224	215.3	61.7	284	273.0	78.3
45	43.3	12.4	105	100.9	28.9	165	158.6	45.5	225	216.3	62.0	285	274.0	78.6
46	44.2	12.7	106	101.9	29.2	166	159.6	45.8	226	217.2	62.3	286	274.9	78.8
47	45.2	13.0	107	102.9	29.5	167	160.5	46.0	227	218.2	62.6	287	275.9	79.1
48	46.1	13.2	108	103.8	29.8	168	161.5	46.3	228	219.2	62.8	288	276.8	79.4
49	47.1	13.5	109	104.8	30.0	169	162.5	46.6	229	220.1	63.1	289	277.8	79.7
50	48.1	13.8	110	105.7	30.3	170	163.4	46.9	230	221.1	63.4	290	278.8	79.9
51	49.0	14.1	111	106.7	30.6	171	164.4	47.1	231	222.1	63.7	291	279.7	80.2
52	50.0	14.3	112	107.7	30.9	172	165.3	47.4	232	223.0	63.9	292	280.7	80.5
53	50.9	14.6	113	108.6	31.1	173	166.3	47.7	233	224.0	64.2	293	281.6	80.8
54	51.9	14.9	114	109.6	31.4	174	167.3	48.0	234	224.9	64.5	294	282.6	81.0
55	52.9	15.2	115	110.5	31.7	175	168.2	48.2	235	225.9	64.8	295	283.6	81.3
56	53.8	15.4	116	111.5	32.0	176	169.2	48.5	236	226.9	65.1	296	284.5	81.6
57	54.8	15.7	117	112.5	32.2	177	170.1	48.8	237	227.8	65.3	297	285.5	81.9
58	55.8	16.0	118	113.4	32.5	178	171.1	49.1	238	228.8	65.6	298	286.5	82.1
59	56.7	16.3	119	114.4	32.8	179	172.1	49.3	239	229.7	65.9	299	287.4	82.4
60	57.7	16.5	120	115.4	33.1	180	173.0	49.6	240	230.7	66.2	300	288.4	82.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 17 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.3	61	58.3	17.8	121	115.7	35.4	181	173.1	52.9	241	230.5	70.5
2	1.9	0.6	62	59.3	18.1	122	116.7	35.7	182	174.0	53.2	242	231.4	70.8
3	2.9	0.9	63	60.2	18.4	123	117.6	36.0	183	175.0	53.5	243	232.4	71.0
4	3.8	1.2	64	61.2	18.7	124	118.6	36.3	184	176.0	53.8	244	233.3	71.3
5	4.8	1.5	65	62.2	19.0	125	119.5	36.5	185	176.9	54.1	245	234.3	71.6
6	5.7	1.8	66	63.1	19.3	126	120.5	36.8	186	177.9	54.4	246	235.3	71.9
7	6.7	2.0	67	64.1	19.6	127	121.5	37.1	187	178.8	54.7	247	236.2	72.2
8	7.7	2.3	68	65.0	19.9	128	122.4	37.4	188	179.8	55.0	248	237.2	72.5
9	8.6	2.6	69	66.0	20.2	129	123.4	37.7	189	180.7	55.3	249	238.1	72.8
10	9.6	2.9	70	66.9	20.5	130	124.3	38.0	190	181.7	55.6	250	239.1	73.1
11	10.5	3.2	71	67.9	20.8	131	125.3	38.3	191	182.7	55.8	251	240.0	73.4
12	11.5	3.5	72	68.9	21.1	132	126.2	38.6	192	183.6	56.1	252	241.0	73.7
13	12.4	3.8	73	69.8	21.3	133	127.2	38.9	193	184.6	56.4	253	241.9	74.0
14	13.4	4.1	74	70.8	21.6	134	128.1	39.2	194	185.5	56.7	254	242.9	74.3
15	14.3	4.4	75	71.7	21.9	135	129.1	39.5	195	186.5	57.0	255	243.9	74.6
16	15.3	4.7	76	72.7	22.2	136	130.1	39.8	196	187.4	57 3	256	244.8	74.8
17	16.3	5.0	77	73.6	22.5	137	131.0	40.1	197	188.4	57.6	257	245.8	75.1
18	17.2	5.3	78	74.6	22.8	138	132.0	40.3	198	189.3	57.9	258	246.7	75.4
19	18.2	5.6	79	75.5	23.1	139	132.9	40.6	199	190.3	58.2	259	247.7	75.7
20	19.1	5.8	80	76.5	23.4	140	133.9	40.9	200	191.3	58.5	260	248.6	76.0
21	20.1	6.1	81	77.5	23.7	141	134.8	41.2	201	192.2	58.8	261	249.6	76.3
22	21.0	6.4	82	78.4	24.0	142	135.8	41.5	202	193.2	59.1	262	250.6	76.6
23	22.0	6.7	83	79.4	24.3	143	136.8	41.8	203	194.1	59.4	263	251.5	76.9
24	23.0	7.0	84	80.3	24.6	144	137.7	42.1	204	195.1	59.6	264	252.5	77.2
25	23.9	7.3	85	81.3	24.9	145	138.7	42.4	205	196.0	59.9	265	253.4	77.5
26	24.9	7.6	86	82.2	25.1	146	139.6	42.7	206	197.0	60.2	266	254.4	77.8
27	25.8	7.9	87	83.2	25.4	147	140.6	43.0	207	198.0	60.5	267	255.3	78.1
28	26.8	8.2	88	84.2	25.7	148	141.5	43.3	208	198.9	60.8	268	256.3	78.4
29	27.7	8.5	89	85.1	26.0	149	142.5	43.6	209	199.9	61.1	269	257.2	78.6
30	28.7	8.8	90	86.1	26.3	150	143.4	43.9	210	200.8	61.4	270	258.2	78.9
31	29.6	9.1	91	87.0	26.6	151	144.4	44.1	211	201.8	61.7	271	259.2	79.2
32	30.6	9.4	92	88.0	26.9	152	145.4	44.4	212	202.7	62.0	272	260.1	79.5
33	31.6	9.6	93	88.9	27.2	153	146.3	44.7	213	203.7	62.3	273	261.1	79.8
34	32.5	9.9	94	89.9	27.5	154	147.3	45.0	214	204.6	62.6	274	262.0	80.1
35	33.5	10.2	95	90.8	27.8	155	148.2	45.3	215	205.6	62.9	275	263.0	80.4
36	34.4	10.5	96	91.8	28.1	156	149.2	45.6	216	206.6	63.2	276	263.9	80.7
37	35.4	10.8	97	92.8	28.4	157	150.1	45.9	217	207.5	63.4	277	264.9	81.0
38	36.3	11.1	98	93.7	28.7	158	151.1	46.2	218	208.5	63.7	278	265.9	81.3
39	37.3	11.4	99	94.7	28.9	159	152.1	46.5	219	209.4	64.0	279	266.8	81.6
40	38.3	11.7	100	95.6	29.2	160	153.0	46.8	220	210.4	64.3	280	267.8	81.9
41	39.2	12.0	101	96.6	29.5	161	154.0	47.1	221	211.3	64.6	281	268.7	82.2
42	40.2	12.3	102	97.5	29.8	162	154.9	47.4	222	212.3	64.9	282	269.7	82.4
43	41.1	12.6	103	98.5	30.1	163	155.9	47.7	223	213.3	65.2	283	270.6	82.7
44	42.1	12.9	104	99.5	30.4	164	156.8	47.9	224	214.2	65.5	284	271.6	83.0
45	43.0	13.2	105	100.4	30.7	165	157.8	48.2	225	215.2	65.8	285	272.5	83.3
46	44.0	13.4	106	101.4	31.0	166	158.7	48.5	226	216.1	66.1	286	273.5	83.6
47	44.9	13.7	107	102.3	31.3	167	159.7	48.8	227	217.1	66.4	287	274.5	83.9
48	45.9	14.0	108	103.3	31.6	168	160.7	49.1	228	218.0	66.7	288	275.4	84.2
49	46.9	14.3	109	104.2	31.9	169	161.6	49.4	229	219.0	67.0	289	276.4	84.5
50	47.8	14.6	110	105.2	32.2	170	162.6	49.7	230	220.0	67.2	290	277.3	84.8
51	48.8	14.9	111	106.1	32.5	171	163.5	50.0	231	220.9	67.5	291	278.3	85.1
52	49.7	15.2	112	107.1	32.7	172	164.5	50.3	232	221.9	67.8	292	279.2	85.4
53	50.7	15.5	113	108.1	33.0	173	165.4	50.6	233	222.8	68.1	293	280.2	85.7
54	51.6	15.8	114	109.0	33.3	174	166.4	50.9	234	223.8	68.4	294	281.2	86.0
55	52.6	16.1	115	110.0	33.6	175	167.4	51.2	235	224.7	68.7	295	282.1	86.2
56	53.6	16.4	116	110.9	33.9	176	168.3	51.5	236	225.7	69.0	296	283.1	86.5
57	54.5	16.7	117	111.9	34.2	177	169.3	51.7	237	226.6	69.3	297	284.0	86.8
58	55.5	17.0	118	112.8	34.5	178	170.2	52.0	238	227.6	69.6	298	285.0	87.1
59	56.4	17.2	119	113.8	34.8	179	171.2	52.3	239	228.6	69.9	299	285.9	87.4
60	57.4	17.5	120	114.8	35.1	180	172.1	52.6	240	229.5	70.2	300	286.9	87.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX. 95

Difference of Latitude and Departure for 18 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	1.0	0.3	61	58.0	18.9	121	115.1	37.4	181	172.1	55.9	241	229.2	74.5
2	1.9	0.6	62	59.0	19.2	122	116.0	37.7	182	173.1	56.2	242	230.2	74.8
3	2.9	0.9	63	59.9	19.5	123	117.0	38.0	183	174.0	56.6	243	231.1	75.1
4	3.8	1.2	64	60.9	19.8	124	117.9	·38.3	184	175.0	56.9	244	232.1	75.4
5	4.8	1.5	65	61.8	20.1	125	118.9	38.6	185	175.9	57.2	245	233.0	75.7
6	5.7	1.9	66	62.8	20.4	126	119.8	38.9	186	176.9	57.5	246	234.0·	76.0
7	6.7	2.2	67	63.7	20.7	127	120.8	39.2	187	177.8	57.8	247	234.9	76.3
8	7.6	2.5	68	64.7	21.0	128	121.7	39.6	188	178.8	58.1	248	235.9	76.6
9	8.6	2.8	69	65.6	21.3	129	122.7	39.9	189	179.7	58.4	249	236.8	76.9
10	9.5	3.1	70	66.6	21.6	130	123.6	40.2	190	180.7	58.7	250	237.8	77.3
11	10.5	3.4	71	67.5	21.9	131	124.6	40.5	191	181.7	59.0	251	238.7	77.6
12	11.4	3.7	72	68.5	22.2	132	125.5	40.8	192	182.6	59.3	252	239.7	77.9
13	12.4	4.0	73	69.4	22.6	133	126.5	41.1	193	183.6	59.6	253	240.6	78.2
14	13.3	4.3	74	70.4	22.9	134	127.4	41.4	194	184.5	59.9	254	241.6	78.5
15	14.3	4.6	75	71.3	23.2	135	128.4	41.7	195	185.5	60.3	255	242.5	78.8
·16	15.2	4.9	76	72.3	23.5	136	129.3	42.0	196	186.4	60.6	256	243.5	79.1
17	16.2	5.3	77	73.2	23.8	137	130.3	42.3	197	187.4	60.9	257	244.4	79.4
18	17.1	5.6	78	74.2	24.1	138	131.2	42.6	198	188.3	61.2	258	245.4	79.7
19	18.1	5.9	79	75.1	24.4	139	132.2	43.0	199	189.3	61.5	259	246.3	80.0
20	19.0	6.2	80	76.1	24.7	140	133.1	43.3	200	190.2	61.8	260	247.3	80.3
21	20.0	6.5	81	77.0	25.0	141	134.1	43.6	201	191.2	62.1	261	248.2	80.7
22	20.9	6.8	82	78.0	25.3	142	135.1	43.9	202	192.1	62.4	262	249.2	81.0
23	21.9	7.1	83	78.9	25.6	143	136.0	44.2	203	193.1	62.7	263	250.1	81.3
24	22.8	7.4	84	79.9	26.0	144	137.0	44.5	204	194.0	63.0	264	251.1	81.6
25	23.8	7.7	85	80.8	26.3	145	137.9	44.8	205	195.0	63.3	265	252.0	81.9
26	24.7	8.0	86	81.8	26.6	146	138.9	45.1	206	195.9	63.7	266	253.0	82.2
27	25.7	8.3	87	82.7	26.9	147	139.8	45.4	207	196.9	64.0	267	253.9	82.5
28	26.6	8.7	88	83.7	27.2	148	140.8	45.7	208	197.8	64.3	268	254.9	82.8
29	27.6	9.0	89	84.6	27.5	149	141.7	46.0	209	198.8	64.6	269	255.8	83.1
30	28.5	9.3	90	85.6	27.8	150	142.7	46.4	210	199.7	64.9	270	256.8	83.4
31	29.5	9.6	91	86.5	28.1	151	143.6	46.7	211	200.7	65.2	271	257.7	83.7
32	30.4	9.9	92	87.5	28.4	152	144.6	47.0	212	201.6	65.5	272	258.7	84.1
33	31.4	10.2	93	88.4	28.7	153	145.5	47.3	213	202.6	65.8	273	259.6	84.4
34	32.3	10.5	94	89.4	29.0	154	146.5	47.6	214	203.5	66.1	274	260.6	84.7
35	33.3	10.8	95	90.4	29.4	155	147.4	47.9	215	204.5	66.4	275	261.5	85.0
36	34.2	11.1	96	91.3	29.7	156	148.4	48.2	216	205.4	66.7	276	262.5	85.3
37	35.2	11.4	97	92.3	30.0	157	149.3	48.5	217	206.4	67.1	277	263.4	85.6
38	36.1	11.7	98	93.2	30.3	158	150.3	48.8	218	207.3	67.4	278	264.4	85.9
39	37.1	12.1	99	94.2	30.6	159	151.2	49.1	219	208.3	67.7	279	265.3	86.2
40	38.0	12.4	100	95.1	30.9	160	152.2	49.4	220	209.2	68.0	280	266.3	86.5
41	39.0	12.7	101	96.1	31.2	161	153.1	49.8	221	210.2	68.3	281	267.2	86.8
42	39.9	13.0	102	97.0	31.5	162	154.1	50.1	222	211.1	68.6	282	268.2	87.1
43	40.9	13.3	103	98.0	31.8	163	155.0	50.4	223	212.1	68.9	283	269.1	87.5
44	41.8	13.6	104	98.9	32.1	164	156.0	50.7	224	213.0	69.2	284	270.1	87.8
45	42.8	13.9	105	99.9	32.4	165	156.9	51.0	225	214.0	69.5	285	271.1	88.1
46	43.7	14.2	106	100.8	32.8	166	157.9	51.3	226	214.9	69.8	286	272.0	88.4
47	44.7	14.5	107	101.8	33.1	167	158.8	51.6	227	215.9	70.1	287	273.0	88.7
48	45.7	14.8	108	102.7	33.4	168	159.8	51.9	228	216.8	70.5	288	273.9	89.0
49	46.6	15.1	109	103.7	33.7	169	160.7	52.2	229	217.8	70.8	289	274.9	89.3
50	47.6	15.5	110	104.6	34.0	170	161.7	52.5	230	218.7	71.1	290	275.8	89.6
51	48.5	15.8	111	105.6	34.3	171	162.6	52.8	231	219.7	71.4	291	276.8	89.9
52	49.5	16.1	112	106.5	34.6	172	163.6	53.2	232	220.6	71.7	292	277.7	90.2
53	50.4	16.4	113	107.5	34.9	173	164.5	53.5	233	221.6	72.0	293	278.7	90.5
54	51.4	16.7	114	108.4	35.2	174	165.5	53.8	234	222.5	72.3	294	279.6	90.9
55	52.3	17.0	115	109.4	35.5	175	166.4	54.1	235	223.5	72.6	295	280.6	91.2
56	53.3	17.3	116	110.3	35.8	176	167.4	54.4	236	224.4	72.9	296	281.5	91.5
57	54.2	17.6	117	111.3	36.2	177	168.3	54.7	237	225.4	73.2	297	282.5	91.8
58	55.2	17.9	118	112.2	36.5	178	169.3	55.0	238	226.4	73.5	298	283.4	92.1
59	56.1	18.2	119	113.2	36.8	179	170.2	55.3	239	227.3	73.9	299	284.4	92.4
60	57.1	18.5	120	114.1	37.1	180	171.2	55.6	240	228.3	74.2	300	285.3	92.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 19 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.3	61	57.7	19.9	121	114.4	39.4	181	171.1	58.9	241	227.9	78.5
2	1.9	0.7	62	58.6	20.2	122	115.4	39.7	182	172.1	59.3	242	228.8	78.8
3	2.8	1.0	63	59.6	20.5	123	116.3	40.0	183	173.0	59.6	243	229.8	79.1
4	3.8	1.3	64	60.5	20.8	124	117.2	40.4	184	174.0	59.9	244	230.7	79.4
5	4.7	1.6	65	61.5	21.2	125	118.2	40.7	185	174.9	60.2	245	231.7	79.8
6	5.7	2.0	66	62.4	21.5	126	119.1	41.0	186	175.9	60.6	246	232.6	80.1
7	6.6	2.3	67	63.3	21.8	127	120.1	41.3	187	176.8	60.9	247	233.5	80.4
8	7.6	2.6	68	64.3	22.1	128	121.0	41.7	188	177.8	61.2	248	234.5	80.7
9	8.5	2.9	69	65.2	22.5	129	122.0	42.0	189	178.7	61.5	249	235.4	81.1
10	9.5	3.3	70	66.2	22.8	130	122.9	42.3	190	179.6	61.9	250	236.4	81.4
11	10.4	3.6	71	67.1	23.1	131	123.9	42.6	191	180.6	62.2	251	237.3	81.7
12	11.3	3.9	72	68.1	23.4	132	124.8	43.0	192	181.5	62.5	252	238.3	82.0
13	12.3	4.2	73	69.0	23.8	133	125.8	43.3	193	182.5	62.8	253	239.2	82.4
14	13.2	4.6	74	70.0	24.1	134	126.7	43.6	194	183.4	63.2	254	240.2	82.7
15	14.2	4.9	75	70.9	24.4	135	127.6	44.0	195	184.4	63.5	255	241.1	83.0
16	15.1	5.2	76	71.9	24.7	136	128.6	44.3	196	185.3	63.8	256	242.1	83.3
17	16.1	5.5	77	72.8	25.1	137	129.5	44.6	197	186.3	64.1	257	243.0	83.7
18	17.0	5.9	78	73.8	25.4	138	130.5	44.9	198	187.2	64.5	258	243.9	84.0
19	18.0	6.2	79	74.7	25.7	139	131.4	45.3	199	188.2	64.8	259	244.9	84.3
20	18.9	6.5	80	75.6	26.0	140	132.4	45.6	200	189.1	65.1	260	245.8	84.6
21	19.9	6.8	81	76.6	26.4	141	133.3	45.9	201	190.0	65.4	261	246.8	85.0
22	20.8	7.2	82	77.5	26.7	142	134.3	46.2	202	191.0	65.8	262	247.7	85.3
23	21.7	7.5	83	78.5	27.0	143	135.2	46.6	203	191.9	66.1	263	248.7	85.6
24	22.7	7.8	84	79.4	27.3	144	136.2	46.9	204	192.9	66.4	264	249.6	86.0
25	23.6	8.1	85	80.4	27.7	145	137.1	47.2	205	193.8	66.7	265	250.6	86.3
26	24.6	8.5	86	81.3	28.0	146	138.0	47.5	206	194.8	67.1	266	251.5	86.6
27	25.5	8.8	87	82.3	28.3	147	139.0	47.9	207	195.7	67.4	267	252.5	86.9
28	26.5	9.1	88	83.2	28.7	148	139.9	48.2	208	196.7	67.7	268	253.4	87.3
29	27.4	9.4	89	84.2	29.0	149	140.9	48.5	209	197.6	68.0	269	254.3	87.6
30	28.4	9.8	90	85.1	29.3	150	141.8	48.8	210	198.6	68.4	270	255.3	87.9
31	29.3	10.1	91	86.0	29.6	151	142.8	49.2	211	199.5	68.7	271	256.2	88.2
32	30.3	10.4	92	87.0	30.0	152	143.7	49.5	212	200.4	69.0	272	257.2	88.6
33	31.2	10.7	93	87.9	30.3	153	144.7	49.8	213	201.4	69.3	273	258.1	88.9
34	32.1	11.1	94	88.9	30.6	154	145.6	50.1	214	202.3	69.7	274	259.1	89.2
35	33.1	11.4	95	89.8	30.9	155	146.6	50.5	215	203.3	70.0	275	260.0	89.5
36	34.0	11.7	96	90.8	31.3	156	147.5	50.8	216	204.2	70.3	276	261.0	89.9
37	35.0	12.0	97	91.7	31.6	157	148.4	51.1	217	205.2	70.6	277	261.9	90.2
38	35.9	12.4	98	92.7	31.9	158	149.4	51.4	218	206.1	71.0	278	262.9	90.5
39	36.9	12.7	99	93.6	32.2	159	150.3	51.8	219	207.1	71.3	279	263.8	90.8
40	37.8	13.0	100	94.6	32.6	160	151.3	52.1	220	208.0	71.6	280	264.7	91.2
41	38.8	13.3	101	95.5	32.9	161	152.2	52.4	221	209.0	72.0	281	265.7	91.5
42	39.7	13.7	102	96.4	33.2	162	153.2	52.7	222	209.9	72.3	282	266.6	91.8
43	40.7	14.0	103	97.4	33.5	163	154.1	53.1	223	210.9	72.6	283	267.6	92.1
44	41.6	14.3	104	98.3	33.9	164	155.1	53.4	224	211.8	72.9	284	268.5	92.5
45	42.5	14.7	105	99.3	34.2	165	156.0	53.7	225	212.7	73.3	285	269.5	92.8
46	43.5	15.0	106	100.2	34.5	166	157.0	54.0	226	213.7	73.6	286	270.4	93.1
47	44.4	15.3	107	101.2	34.8	167	157.9	54.4	227	214.6	73.9	287	271.4	93.4
48	45.4	15.6	108	102.1	35.2	168	158.8	54.7	228	215.6	74.2	288	272.3	93.8
49	46.3	16.0	109	103.1	35.5	169	159.8	55.0	229	216.5	74.6	289	273.3	94.1
50	47.3	16.3	110	104.0	35.8	170	160.7	55.3	230	217.5	74.9	290	274.2	94.4
51	48.2	16.6	111	105.0	36.1	171	161.7	55.7	231	218.4	75.2	291	275.1	94.7
52	49.2	16.9	112	105.9	36.5	172	162.6	56.0	232	219.4	75.5	292	276.1	95.1
53	50.1	17.3	113	106.8	36.8	173	163.6	56.3	233	220.3	75.9	293	277.0	95.4
54	51.1	17.6	114	107.8	37.1	174	164.5	56.6	234	221.3	76.2	294	278.0	95.7
55	52.0	17.9	115	108.7	37.4	175	165.5	57.0	235	222.2	76.5	295	278.9	96.0
56	52.9	18.2	116	109.7	37.8	176	166.4	57.3	236	223.1	76.8	296	279.9	96.4
57	53.9	18.6	117	110.6	38.1	177	167.4	57.6	237	224.1	77.2	297	280.8	96.7
58	54.8	18.9	118	111.6	38.4	178	168.3	58.0	238	225.0	77.5	298	281.8	97.0
59	55.8	19.2	119	112.5	38.7	179	169.2	58.3	239	226.0	77.8	299	282.7	97.3
60	56.7	19.5	120	113.5	39.1	180	170.2	58.6	240	226.9	78.1	300	283.7	97.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX. 97

Difference of Latitude and Departure for 20 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.3	61	57.3	20.9	121	113.7	41.4	181	170.1	61.9	241	226.5	82.4
2	1.9	0.7	62	58.3	21.2	122	114.6	41.7	182	171.0	62.2	242	227.4	82.8
3	2.8	1.0	63	59.2	21.5	123	115.6	42.1	183	172.0	62.6	243	228.3	83.1
4	3.8	1.4	64	60.1	21.9	124	116.5	42.4	184	172.9	62.9	244	229.3	83.5
5	4.7	1.7	65	61.1	22.2	125	117.5	42.8	185	173.8	63.3	245	230.2	83.8
6	5.6	2.1	66	62.0	22.6	126	118.4	43.1	186	174.8	63.6	246	231.2	84.1
7	6.6	2.4	67	63.0	22.9	127	119.3	43.4	187	175.7	64.0	247	232.1	84.5
8	7.5	2.7	68	63.9	23.3	128	120.3	43.8	188	176.7	64.3	248	233.0	84.8
9	8.5	3.1	69	64.8	23.6	129	121.2	44.1	189	177.6	64.6	249	234.0	85.2
10	9.4	3.4	70	65.8	23.9	130	122.2	44.5	190	178.5	65.0	250	234.9	85.5
11	10.3	3.8	71	66.7	24.3	131	123.1	44.8	191	179.5	65.3	251	235.9	85.8
12	11.3	4.1	72	67.7	24.6	132	124.0	45.1	192	180.4	65.7	252	236.8	86.2
13	12.2	4.4	73	68.6	25.0	133	125.0	45.5	193	181.4	66.0	253	237.7	86.5
14	13.2	4.8	74	69.5	25.3	134	125.9	45.8	194	182.3	66.4	254	238.7	86.9
15	14.1	5.1	75	70.5	25.7	135	126.9	46.2	195	183.2	66.7	255	239.6	87.2
16	15.0	5.5	76	71.4	26.0	136	127.8	46.5	196	184.2	67.0	256	240.6	87.6
17	16.0	5.8	77	72.4	26.3	137	128.7	46.9	197	185.1	67.4	257	241.5	87.9
18	16.9	6.2	78	73.3	26.7	138	129.7	47.2	198	186.1	67.7	258	242.4	88.2
19	17.9	6.5	79	74.2	27.0	139	130.6	47.5	199	187.0	68.1	259	243.4	88.6
20	18.8	6.8	80	75.2	27.4	140	131.6	47.9	200	187.9	68.4	260	244.3	88.9
21	19.7	7.2	81	76.1	27.7	141	132.5	48.2	201	188.9	68.7	261	245.3	89.3
22	20.7	7.5	82	77.1	28.0	142	133.4	48.6	202	189.8	69.1	262	246.2	89.6
23	21.6	7.9	83	78.0	28.4	143	134.4	48.9	203	190.8	69.4	263	247.1	90.0
24	22.6	8.2	84	78.9	28.7	144	135.3	49.3	204	191.7	69.8	264	248.1	90.3
25	23.5	8.6	85	79.9	29.1	145	136.3	49.6	205	192.6	70.1	265	249.0	90.6
26	24.4	8.9	86	80.8	29.4	146	137.2	49.9	206	193.6	70.5	266	250.0	91.0
27	25.4	9.2	87	81.8	29.8	147	138.1	50.3	207	194.5	70.8	267	250.9	91.3
28	26.3	9.6	88	82.7	30.1	148	139.1	50.6	208	195.5	71.1	268	251.8	91.7
29	27.3	9.9	89	83.6	30.4	149	140.0	51.0	209	196.4	71.5	269	252.8	92.0
30	28.2	10.3	90	84.6	30.8	150	141.0	51.3	210	197.3	71.8	270	253.7	92.3
31	29.1	10.6	91	85.5	31.1	151	141.9	51.6	211	198.3	72.2	271	254.7	92.7
32	30.1	10.9	92	86.5	31.5	152	142.8	52.0	212	199.2	72.5	272	255.6	93.0
33	31.0	11.3	93	87.4	31.8	153	143.8	52.3	213	200.2	72.9	273	256.5	93.4
34	31.9	11.6	94	88.3	32.1	154	144.7	52.7	214	201.1	73.2	274	257.5	93.7
35	32.9	12.0	95	89.3	32.5	155	145.7	53.0	215	202.0	73.5	275	258.4	94.1
36	33.8	12.3	96	90.2	32.8	156	146.6	53.4	216	203.0	73.9	276	259.4	94.4
37	34.8	12.7	97	91.2	33.2	157	147.5	53.7	217	203.9	74.2	277	260.3	94.7
38	35.7	13.0	98	92.1	33.5	158	148.5	54.0	218	204.9	74.6	278	261.2	95.1
39	36.6	13.3	99	93.0	33.9	159	149.4	54.4	219	205.8	74.9	279	262.2	95.4
40	37.6	13.7	100	94.0	34.2	160	150.4	54.7	220	206.7	75.2	280	263.1	95.8
41	38.5	14 0	101	94.9	34.5	161	151.3	55.1	221	207.7	75.6	281	264.1	96.1
42	39.5	14.4	102	95.8	34.9	162	152.2	55.4	222	208.6	75.9	282	265.0	96.4
43	40.4	14.7	103	96.8	35.2	163	153.2	55.7	223	209.6	76.3	283	265.9	96.8
44	41.3	15.0	104	97.7	35.6	164	154.1	56.1	224	210.5	76.6	284	266.9	97.1
45	42.3	15.4	105	98.7	35.9	165	155.0	56.4	225	211.4	77.0	285	267.8	97.5
46	43.2	15.7	106	99.6	36.3	166	156.0	56.8	226	212.4	77.3	286	268.8	97.8
47	44.2	16.1	107	100.5	36.6	167	156.9	57.1	227	213.3	77.6	287	269.7	98.2
48	45.1	16.4	108	101.5	36.9	168	157.9	57.5	228	214.2	78.0	288	270.6	98.5
49	46.0	16.8	109	102.4	37.3	169	158.8	57.8	229	215.2	78.3	289	271.6	98.8
50	47.0	17.1	110	103.4	37.6	170	159.7	58.1	230	216.1	78.7	290	272.5	99.2
51	47.9	17.4	111	104.3	38.0	171	160.7	58.5	231	217.1	79.0	291	273.5	99.5
52	48.9	17.8	112	105.2	38.3	172	161.6	58 8	232	218.0	79.3	292	274.4	99.9
53	49.8	18.1	113	106.2	38.6	173	162.6	59.2	233	218.9	79.7	293	275.3	100.2
54	50.7	18.5	114	107.1	39.0	174	163.5	59.5	234	219.9	80.0	294	276.3	100.6
55	51.7	18.8	115	108.1	39.3	175	164.4	59.9	235	220.8	80.4	295	277.2	100.9
56	52.6	19.2	116	109.0	39.7	176	165.4	60.2	236	221.8	80.7	296	278.1	101.2
57	53.6	19.5	117	109.9	40.0	177	166.3	60.5	237	222.7	81.1	297	279.1	101.6
58	54.5	19.8	118	110.9	40.4	178	167.3	60.9	238	223.6	81.4	298	280.0	101.9
59	55.4	20.2	119	111.8	40.7	179	168.2	61.2	239	224.6	81.7	299	281.0	102.3
60	56.4	20.5	120	112.8	41.0	180	169.1	61.6	240	225.5	82.1	300	281.9	102.6
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 70 Degrees.

TABLE IX.

Difference of Latitude and Departure for 21 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.4	61	56.9	21.9	121	113.0	43.4	181	169.0	64.9	241	225.0	86.4
2	1.9	0.7	62	57.9	22.2	122	113.9	43.7	182	169.9	65.2	242	225.9	86.7
3	2.8	1.1	63	58.8	22.6	123	114.8	44.1	183	170.8	65.6	243	226.9	87.1
4	3.7	1.4	64	59.7	22.9	124	115.8	44.4	184	171.8	65.9	244	227.8	87.4
5	4.7	1.8	65	60.7	23.3	125	116.7	44.8	185	172.7	66.3	245	228.7	87.8
6	5.6	2.2	66	61.6	23.7	126	117.6	45.2	186	173.6	66.7	246	229.7	88.2
7	6.5	2.5	67	62.5	24.0	127	118.6	45.5	187	174.6	67.0	247	230.6	88.5
8	7.5	2.9	68	63.5	24.4	128	119.5	45.9	188	175.5	67.4	248	231.5	88.9
9	8.4	3.2	69	64.4	24.7	129	120.4	46.2	189	176.4	67.7	249	232.5	89.2
10	9.3	3.6	70	65.4	25.1	130	121.4	46.6	190	177.4	68.1	250	233.4	89.6
11	10.3	3.9	71	66.3	25.4	131	122.3	46.9	191	178.3	68.4	251	234.3	90.0
12	11.2	4.3	72	67.2	25.8	132	123.2	47.3	192	179.2	68.8	252	235.3	90.3
13	12.1	4.7	73	68.2	26.2	133	124.2	47.7	193	180.2	69.2	253	236.2	90.7
14	13.1	5.0	74	69.1	26.5	134	125.1	48.0	194	181.1	69.5	254	237.1	91.0
15	14.0	5.4	75	70.0	26.9	135	126.0	48.4	195	182.0	69.9	255	238.1	91.4
16	14.9	5.7	76	71.0	27.2	136	127.0	48.7	196	183.0	70.2	256	239.0	91.7
17	15.9	6.1	77	71.9	27.6	137	127.9	49.1	197	183.9	70.6	257	239.9	92.1
18	16.8	6.5	78	72.8	28.0	138	128.8	49.5	198	184.8	71.0	258	240.9	92.5
19	17.7	6.8	79	73.8	28.3	139	129.8	49.8	199	185.8	71.3	259	241.8	92.8
20	18.7	7.2	80	74.7	28.7	140	130.7	50.2	200	186.7	71.7	260	242.7	93.2
21	19.6	7.5	81	75.6	29.0	141	131.6	50.5	201	187.6	72.0	261	243.7	93.5
22	20.5	7.9	82	76.6	29.4	142	132.6	50.9	202	188.6	72.4	262	244.6	93.9
23	21.5	8.2	83	77.5	29.7	143	133.5	51.2	203	189.5	72.7	263	245.5	94.3
24	22.4	8.6	84	78.4	30.1	144	134.4	51.6	204	190.5	73.1	264	246.5	94.6
25	23.3	9.0	85	79.4	30.5	145	135.4	52.0	205	191.4	73.5	265	247.4	95.0
26	24.3	9.3	86	80.3	30.8	146	136.3	52.3	206	192.3	73.8	266	248.3	95.3
27	25.2	9.7	87	81.2	31.2	147	137.2	52.7	207	193.3	74.2	267	249.3	95.7
28	26.1	10.0	88	82.2	31.5	148	138.2	53.0	208	194.2	74.5	268	250.2	96.0
29	27.1	10.4	89	83.1	31.9	149	139.1	53.4	209	195.1	74.9	269	251.1	96.4
30	28.0	10.8	90	84.0	32.3	150	140.0	53.8	210	196.1	75.3	270	252.1	96.8
31	28.9	11.1	91	85.0	32.6	151	141.0	54.1	211	197.0	75.6	271	253.0	97.1
32	29.9	11.5	92	85.9	33.0	152	141.9	54.5	212	197.9	76.0	272	253.9	97.5
33	30.8	11.8	93	86.8	33.3	153	142.8	54.8	213	198.9	76.3	273	254.9	97.8
34	31.7	12.2	94	87.8	33.7	154	143.8	55.2	214	199.8	76.7	274	255.8	98.2
35	32.7	12.5	95	88.7	34.0	155	144.7	55.5	215	200.7	77.0	275	256.7	98.6
36	33.6	12.9	96	89.6	34.4	156	145.6	55.9	216	201.7	77.4	276	257.7	98.9
37	34.5	13.3	97	90.6	34.8	157	146.6	56.3	217	202.6	77.8	277	258.6	99.3
38	35.5	13.6	98	91.5	35.1	158	147.5	56.6	218	203.5	78.1	278	259.5	99.6
39	36.4	14.0	99	92.4	35.5	159	148.4	57.0	219	204.5	78.5	279	260.5	100.0
40	37.3	14.3	100	93.4	35.8	160	149.4	57.3	220	205.4	78.8	280	261.4	100.3
41	38.3	14.7	101	94.3	36.2	161	150.3	57.7	221	206.3	79.2	281	262.3	100.7
42	39.2	15.1	102	95.2	36.6	162	151.2	58.1	222	207.3	79.6	282	263.3	101.1
43	40.1	15.4	103	96.2	36.9	163	152.2	58.4	223	208.2	79.9	283	264.2	101.4
44	41.1	15.8	104	97.1	37.3	164	153.1	58.8	224	209.1	80.3	284	265.1	101.8
45	42.0	16.1	105	98.0	37.6	165	154.0	59.1	225	210.1	80.6	285	266.1	102.1
46	42.9	16.5	106	99.0	38.0	166	155.0	59.5	226	211.0	81.0	286	267.0	102.5
47	43.9	16.8	107	99.9	38.3	167	155.9	59.8	227	211.9	81.3	287	267.9	102.9
48	44.8	17.2	108	100.8	38.7	168	156.8	60.2	228	212.9	81.7	288	268.9	103.2
49	45.7	17.6	109	101.8	39.1	169	157.8	60.6	229	213.8	82.1	289	269.8	103.6
50	46.7	17.9	110	102.7	39.4	170	158.7	60.9	230	214.7	82.4	290	270.7	103.9
51	47.6	18.3	111	103.6	39.8	171	159.6	61.3	231	215.7	82.8	291	271.7	104.3
52	48.5	18.6	112	104.6	40.1	172	160.6	61.6	232	216.6	83.1	292	272.6	104.6
53	49.5	19.0	113	105.5	40.5	173	161.5	62.0	233	217.5	83.5	293	273.5	105.0
54	50.4	19.4	114	106.4	40.9	174	162.4	62.4	234	218.5	83.9	294	274.5	105.4
55	51.3	19.7	115	107.4	41.2	175	163.4	62.7	235	219.4	84.2	295	275.4	105.7
56	52.3	20.1	116	108.3	41.6	176	164.3	63.1	236	220.3	84.6	296	276.3	106.1
57	53.2	20.4	117	109.2	41.9	177	165.2	63.4	237	221.3	84.9	297	277.3	106.4
58	54.1	20.8	118	110.2	42.3	178	166.2	63.8	238	222.2	85.3	298	278.2	106.8
59	55.1	21.1	119	111.1	42.6	179	167.1	64.1	239	223.1	85.6	299	279.1	107.2
60	56.0	21.5	120	112.0	43.0	180	168.0	64.5	240	224.1	86.0	300	280.1	107.5
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 69 Degrees.

TABLE IX.

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Difference of Latitude and Departure for 22 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.4	61	56.6	22.9	121	112.2	45.3	181	167.8	67.8	241	223.5	90.3
2	1.9	0.7	62	57.5	23.2	122	113.1	45.7	182	168.7	68.2	242	224.4	90.7
3	2.8	1.1	63	58.4	23.6	123	114.0	46.1	183	169.7	68.6	243	225.3	91.0
4	3.7	1.5	64	59.3	24.0	124	115.0	46.5	184	170.6	68.9	244	226.2	91.4
5	4.6	1.9	65	60.3	24.3	125	115.9	46.8	185	171.5	69.3	245	227.2	91.8
6	5.6	2.2	66	61.2	24.7	126	116.8	47.2	186	172.5	69.7	246	228.1	92.2
7	6.5	2.6	67	62.1	25.1	127	117.8	47.6	187	173.4	70.1	247	229.0	92.5
8	7.4	3.0	68	63.0	25.5	128	118.7	47.9	188	174.3	70.4	248	229.9	92.9
9	8.3	3.4	69	64.0	25.8	129	119.6	48.3	189	175.2	70.8	249	230.9	93.3
10	9.3	3.7	70	64.9	26.2	130	120.5	48.7	190	176.2	71.2	250	231.8	93.7
11	10.2	4.1	71	65.8	26.6	131	121.5	49.1	191	177.1	71.5	251	232.7	94.0
12	11.1	4.5	72	66.8	27.0	132	122.4	49.4	192	178.0	71.9	252	233.7	94.4
13	12.1	4.9	73	67.7	27.3	133	123.3	49.8	193	178.9	72.3	253	234.6	94.8
14	13.0	5.2	74	68.6	27.7	134	124.2	50.2	194	179.9	72.7	254	235.5	95.2
15	13.9	5.6	75	69.5	28.1	135	125.2	50.6	195	180.8	73.0	255	236.4	95.5
16	14.8	6.0	76	70.5	28.5	136	126.1	50.9	196	181.7	73.4	256	237.4	95.9
17	15.8	6.4	77	71.4	28.8	137	127.0	51.3	197	182.7	73.8	257	238.3	96.3
18	16.7	6.7	78	72.3	29.2	138	128.0	51.7	198	183.6	74.2	258	239.2	96.6
19	17.6	7.1	79	73.2	29.6	139	128.9	52.1	199	184.5	74.5	259	240.1	97.0
20	18.5	7.5	80	74.2	30.0	140	129.8	52.4	200	185.4	74.9	260	241.1	97.4
21	19.5	7.9	81	75.1	30.3	141	130.7	52.8	201	186.4	75.3	261	242.0	97.8
22	20.4	8.2	82	76.0	30.7	142	131.7	53.2	202	187.3	75.7	262	242.9	98.1
23	21.3	8.6	83	77.0	31.1	143	132.6	53.6	203	188.2	76.0	263	243.8	98.5
24	22.3	9.0	84	77.9	31.5	144	133.5	53.9	204	189.1	76.4	264	244.8	98.9
25	23.2	9.4	85	78.8	31.8	145	134.4	54.3	205	190.1	76.8	265	245.7	99.3
26	24.1	9.7	86	79.7	32.2	146	135.4	54.7	206	191.0	77.2	266	246.6	99.6
27	25.0	10.1	87	80.7	32.6	147	136.3	55.1	207	191.9	77.5	267	247.6	100.0
28	26.0	10.5	88	81.6	33.0	148	137.2	55.4	208	192.9	77.9	268	248.5	100.4
29	26.9	10.9	89	82.5	33.3	149	138.2	55.8	209	193.8	78.3	269	249.4	100.8
30	27.8	11.2	90	83.4	33.7	150	139.1	56.2	210	194.7	78.7	270	250.3	101.1
31	28.7	11.6	91	84.4	34.1	151	140.0	56.6	211	195.6	79.0	271	251.3	101.5
32	29.7	12.0	92	85.3	34.5	152	140.9	56.9	212	196.6	79.4	272	252.2	101.9
33	30.6	12.4	93	86.2	34.8	153	141.9	57.3	213	197.5	79.8	273	253.1	102.3
34	31.5	12.7	94	87.2	35.2	154	142.8	57.7	214	198.4	80.2	274	254.0	102.6
35	32.5	13.1	95	88.1	35.6	155	143.7	58.1	215	199.3	80.5	275	255.0	103.0
36	33.4	13.5	96	89.0	36.0	156	144.6	58.4	216	200.3	80.9	276	255.9	103.4
37	34.3	13.9	97	89.9	36.3	157	145.6	58.8	217	201.2	81.3	277	256.8	103.8
38	35.2	14.2	98	90.9	36.7	158	146.5	59.2	218	202.1	81.7	278	257.8	104.1
39	36.2	14.6	99	91.8	37.1	159	147.4	59.6	219	203.1	82.0	279	258.7	104.5
40	37.1	15.0	100	92.7	37.5	160	148.3	59.9	220	204.0	82.4	280	259.6	104.9
41	38.0	15.4	101	93.6	37.8	161	149.3	60.3	221	204.9	82.8	281	260.5	105.3
42	38.9	15.7	102	94.6	38.2	162	150.2	60.7	222	205.8	83.2	282	261.5	105.6
43	39.9	16.1	103	95.5	38.6	163	151.1	61.1	223	206.8	83.5	283	262.4	106.0
44	40.8	16.5	104	96.4	39.0	164	152.1	61.4	224	207.7	83.9	284	263.3	106.4
45	41.7	16.9	105	97.4	39.3	165	153.0	61.8	225	208.6	84.3	285	264.2	106.8
46	42.7	17.2	106	98.3	39.7	166	153.9	62.2	226	209.5	84.7	286	265.2	107.1
47	43.6	17.6	107	99.2	40.1	167	154.8	62.6	227	210.5	85.0	287	266.1	107.5
48	44.5	18.0	108	100.1	40.5	168	155.8	62.9	228	211.4	85.4	288	267.0	107.9
49	45.4	18.4	109	101.1	40.8	169	156.7	63.3	229	212.3	85.8	289	268.0	108.3
50	46.4	18.7	110	102.0	41.2	170	157.6	63.7	230	213.3	86.2	290	268.9	108.6
51	47.3	19.1	111	102.9	41.6	171	158.5	64.1	231	214.2	86.5	291	269.8	109.0
52	48.2	19.5	112	103.8	42.0	172	159.5	64.4	232	215.1	86.9	292	270.7	109.4
53	49.1	19.9	113	104.8	42.3	173	160.4	64.8	233	216.0	87.3	293	271.7	109.8
54	50.1	20.2	114	105.7	42.7	174	161.3	65.2	234	217.0	87.7	294	272.6	110.1
55	51.0	20.6	115	106.6	43.1	175	162.3	65.6	235	217.9	88.0	295	273.5	110.5
56	51.9	21.0	116	107.6	43.5	176	163.2	65.9	236	218.8	88.4	296	274.4	110.9
57	52.8	21.4	117	108.5	43.8	177	164.1	66.3	237	219.7	88.8	297	275.4	111.3
58	53.8	21.7	118	109.4	44.2	178	165.0	66.7	238	220.7	89.2	298	276.3	111.6
59	54.7	22.1	119	110.3	44.6	179	166.0	67.1	239	221.6	89.5	299	277.2	112.0
60	55.6	22.5	120	111.3	45.0	180	166.9	67.4	240	222.5	89.9	300	278.2	112.4
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 68 Degrees.

TABLE IX.

Difference of Latitude and Departure for 23 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.4	61	56.2	23.8	121	111.4	47.3	181	166.6	70.7	241	221.8	94.2
2	1.8	0.8	62	57.1	24.2	122	112.3	47.7	182	167.5	71.1	242	222.8	94.6
3	2.8	1.2	63	58.0	24.6	123	113.2	48.1	183	168.5	71.5	243	223.7	94.9
4	3.7	1.6	64	58.9	25.0	124	114.1	48.5	184	169.4	71.9	244	224.6	95.3
5	4.6	2.0	65	59.8	25.4	125	115.1	48.8	185	170.3	72.3	245	225.5	95.7
6	5.5	2.3	66	60.8	25.8	126	116.0	49.2	186	171.2	72.7	246	226.4	96.1
7	6.4	2.7	67	61.7	26.2	127	116.9	49.6	187	172.1	73.1	247	227.4	96.5
8	7.4	3.1	68	62.6	26.6	128	117.8	50.0	188	173.1	73.5	248	228.3	96.9
9	8.3	3.5	69	63.5	27.0	129	118.7	50.4	189	174.0	73.8	249	229.2	97.3
10	9.2	3.9	70	64.4	27.4	130	119.7	50.8	190	174.9	74.2	250	230.1	97.7
11	10.1	4.3	71	65.4	27.7	131	120.6	51.2	191	175.8	74.6	251	231.0	98.1
12	11.0	4.7	72	66.3	28.1	132	121.5	51.6	192	176.7	75.0	252	232.0	98.5
13	12.0	5.1	73	67.2	28.5	133	122.4	52.0	193	177.7	75.4	253	232.9	98.9
14	12.9	5.5	74	68.1	28.9	134	123.3	52.4	194	178.6	75.8	254	233.8	99.2
15	13.8	5.9	75	69.0	29.3	135	124.3	52.7	195	179.5	76.2	255	234.7	99.6
16	14.7	6.3	76	70.0	29.7	136	125.2	53.1	196	180.4	76.6	256	235.6	100.0
17	15.6	6.6	77	70.9	30.1	137	126.1	53.5	197	181.3	77.0	257	236.6	100.4
18	16.6	7.0	78	71.8	30.5	138	127.0	53.9	198	182.3	77.4	258	237.5	100.8
19	17.5	7.4	79	72.7	30.9	139	128.0	54.3	199	183.2	77.8	259	238.4	101.2
20	18.4	7.8	80	73.6	31.3	140	128.9	54.7	200	184.1	78.1	260	239.3	101.6
21	19.3	8.2	81	74.6	31.6	141	129.8	55.1	201	185.0	78.5	261	240.3	102.0
22	20.3	8.6	82	75.5	32.0	142	130.7	55.5	202	185.9	78.9	262	241.2	102.4
23	21.2	9.0	83	76.4	32.4	143	131.6	55.9	203	186.9	79.3	263	242.1	102.8
24	22.1	9.4	84	77.3	32.8	144	132.6	56.3	204	187.8	79.7	264	243.0	103.2
25	23.0	9.8	85	78.2	33.2	145	133.5	56.7	205	188.7	80.1	265	243.9	103.5
26	23.9	10.2	86	79.2	33.6	146	134.4	57.0	206	189.6	80.5	266	244.9	103.9
27	24.9	10.5	87	80.1	34.0	147	135.3	57.4	207	190.5	80.9	267	245.8	104.3
28	25.8	10.9	88	81.0	34.4	148	136.2	57.8	208	191.5	81.3	268	246.7	104.7
29	26.7	11.3	89	81.9	34.8	149	137.2	58.2	209	192.4	81.7	269	247.6	105.1
30	27.6	11.7	90	82.8	35.2	150	138.1	58.6	210	193.3	82.1	270	248.5	105.5
31	28.5	12.1	91	83.8	35.6	151	139.0	59.0	211	194.2	82.4	271	249.5	105.9
32	29.5	12.5	92	84.7	35.9	152	139.9	59.4	212	195.1	82.8	272	250.4	106.3
33	30.4	12.9	93	85.6	36.3	153	140.8	59.8	213	196.1	83.2	273	251.3	106.7
34	31.3	13.3	94	86.5	36.7	154	141.8	60.2	214	197.0	83.6	274	252.2	107.1
35	32.2	13.7	95	87.4	37.1	155	142.7	60.6	215	197.9	84.0	275	253.1	107.5
36	33.1	14.1	96	88.4	37.5	156	143.6	61.0	216	198.8	84.4	276	254.1	107.8
37	34.1	14.5	97	89.3	37.9	157	144.5	61.3	217	199.7	84.8	277	255.0	108.2
38	35.0	14.8	98	90.2	38.3	158	145.4	61.7	218	200.7	85.2	278	255.9	108.6
39	35.9	15.2	99	91.1	38.7	159	146.4	62.1	219	201.6	85.6	279	256.8	109.0
40	36.8	15.6	100	92.1	39.1	160	147.3	62.5	220	202.5	86.0	280	257.7	109.4
41	37.7	16.0	101	93.0	39.5	161	148.2	62.9	221	203.4	86.4	281	258.7	109.8
42	38.7	16.4	102	93.9	39.9	162	149.1	63.3	222	204.4	86.7	282	259.6	110.2
43	39.6	16.8	103	94.8	40.2	163	150.0	63.7	223	205.3	87.1	283	260.5	110.6
44	40.5	17.2	104	95.7	40.6	164	151.0	64.1	224	206.2	87.5	284	261.4	111.0
45	41.4	17.6	105	96.7	41.0	165	151.9	64.5	225	207.1	87.9	285	262.3	111.4
46	42.3	18.0	106	97.6	41.4	166	152.8	64.9	226	208.0	88.3	286	263.3	111.7
47	43.3	18.4	107	98.5	41.8	167	153.7	65.3	227	209.0	88.7	287	264.2	112.1
48	44.2	18.8	108	99.4	42.2	168	154.6	65.6	228	209.9	89.1	288	265.1	112.5
49	45.1	19.1	109	100.3	42.6	169	155.6	66.0	229	210.8	89.5	289	266.0	112.9
50	46.0	19.5	110	101.3	43.0	170	156.5	66.4	230	211.7	89.9	290	266.9	113.3
51	46.9	19.9	111	102.2	43.4	171	157.4	66.8	231	212.6	90.3	291	267.9	113.7
52	47.9	20.3	112	103.1	43.8	172	158.3	67.2	232	213.6	90.6	292	268.8	114.1
53	48.8	20.7	113	104.0	44.2	173	159.2	67.6	233	214.5	91.0	293	269.7	114.5
54	49.7	21.1	114	104.9	44.5	174	160.2	68.0	234	215.4	91.4	294	270.6	114.9
55	50.6	21.5	115	105.9	44.9	175	161.1	68.4	235	216.3	91.8	295	271.5	115.3
56	51.5	21.9	116	106.8	45.3	176	162.0	68.8	236	217.2	92.2	296	272.5	115.7
57	52.5	22.3	117	107.7	45.7	177	162.9	69.2	237	218.2	92.6	297	273.4	116.0
58	53.4	22.7	118	108.6	46.1	178	163.8	69.6	238	219.1	93.0	298	274.3	116.4
59	54.3	23.1	119	109.5	46.5	179	164.8	69.9	239	220.0	93.4	299	275.2	116.8
60	55.2	23.4	120	110.5	46.9	180	165.7	70.3	240	220.9	93.8	300	276.2	117.2
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX. 101

Difference of Latitude and Departure for 24 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.4	61	55.7	24.8	121	110.5	49.2	181	165.4	73.6	241	220.2	98.0
2	1.8	0.8	62	56.6	25.2	122	111.5	49.6	182	166.3	74.0	242	221.1	98.4
3	2.7	1.2	63	57.6	25.6	123	112.4	50.0	183	167.2	74.4	243	222.0	98.8
4	3.7	1.6	64	58.5	26.0	124	113.3	50.4	184	168.1	74.8	244	222.9	99.2
5	4.6	2.0	65	59.4	26.4	125	114.2	50.8	185	169.0	75.2	245	223.8	99.7
6	5.5	2.4	66	60.3	26.8	126	115.1	51.2	186	169.9	75.7	246	224.7	100.1
7	6.4	2.8	67	61.2	27.3	127	116.0	51.7	187	170.8	76.1	247	225.6	100.5
8	7.3	3.3	68	62.1	27.7	128	116.9	52.1	188	171.7	76.5	248	226.6	100.9
9	8.2	3.7	69	63.0	28.1	129	117.8	52.5	189	172.7	76.9	249	227.5	101.3
10	9.1	4.1	70	63.9	28.5	130	118.8	52.9	190	173.6	77.3	250	228.4	101.7
11	10.0	4.5	71	64.9	28.9	131	119.7	53.3	191	174.5	77.7	251	229.3	102.1
12	11.0	4.9	72	65.8	29.3	132	120.6	53.7	192	175.4	78.1	252	230.2	102.5
13	11.9	5.3	73	66.7	29.7	133	121.5	54.1	193	176.3	78.5	253	231.1	102.9
14	12.8	5.7	74	67.6	30.1	134	122.4	54.5	194	177.2	78.9	254	232.0	103.3
15	13.7	6.1	75	68.5	30.5	135	123.3	54.9	195	178.1	79.3	255	233.0	103.7
16	14.6	6.5	76	69.4	30.9	136	124.2	55.3	196	179.1	79.7	256	233.9	104.1
17	15.5	6.9	77	70.3	31.3	137	125.2	55.7	197	180.0	80.1	257	234.8	104.5
18	16.4	7.3	78	71.3	31.7	138	126.1	56.1	198	180.9	80.5	258	235.7	104.9
19	17.4	7.7	79	72.2	32.1	139	127.0	56.5	199	181.8	80.9	259	236.6	105.3
20	18.3	8.1	80	73.1	32.5	140	127.9	56.9	200	182.7	81.3	260	237.5	105.8
21	19.2	8.5	81	74.0	32.9	141	128.8	57.3	201	183.6	81.8	261	238.4	106.2
22	20.1	8.9	82	74.9	33.4	142	129.7	57.8	202	184.5	82.2	262	239.3	106.6
23	21.0	9.4	83	75.8	33.8	143	130.6	58.2	203	185.4	82.6	263	240.3	107.0
24	21.9	9.8	84	76.7	34.2	144	131.6	58.6	204	186.4	83.0	264	241.2	107.4
25	22.8	10.2	85	77.7	34.6	145	132.5	59.0	205	187.3	83.4	265	242.1	107.8
26	23.8	10.6	86	78.6	35.0	146	133.4	59.4	206	188.2	83.8	266	243.0	108.2
27	24.7	11.0	87	79.5	35.4	147	134.3	59.8	207	189.1	84.2	267	243.9	108.6
28	25.6	11.4	88	80.4	35.8	148	135.2	60.2	208	190.0	84.6	268	244.8	109.0
29	26.5	11.8	89	81.3	36.2	149	136.1	60.6	209	190.9	85.0	269	245.7	109.4
30	27.4	12.2	90	82.2	36.6	150	137.0	61.0	210	191.8	85.4	270	246.7	109.8
31	28.3	12.6	91	83.1	37.0	151	137.9	61.4	211	192.8	85.8	271	247.6	110.2
32	29.2	13.0	92	84.0	37.4	152	138.9	61.8	212	193.7	86.2	272	248.5	110.6
33	30.1	13.4	93	85.0	37.8	153	139.8	62.2	213	194.6	86.6	273	249.4	111.0
34	31.1	13.8	94	85.9	38.2	154	140.7	62.6	214	195.5	87.0	274	250.3	111.4
35	32.0	14.2	95	86.8	38.6	155	141.6	63.0	215	196.4	87.4	275	251.2	111.9
36	32.9	14.6	96	87.7	39.0	156	142.5	63.5	216	197.3	87.9	276	252.1	112.3
37	33.8	15.0	97	88.6	39.5	157	143.4	63.9	217	198.2	88.3	277	253.1	112.7
38	34.7	15.5	98	89.5	39.9	158	144.3	64.3	218	199.2	88.7	278	254.0	113.1
39	35.6	15.9	99	90.4	40.3	159	145.3	64.7	219	200.1	89.1	279	254.9	113.5
40	36.5	16.3	100	91.4	40.7	160	146.2	65.1	220	201.0	89.5	280	255.8	113.9
41	37.5	16.7	101	92.3	41.1	161	147.1	65.5	221	201.9	89.9	281	256.7	114.3
42	38.4	17.1	102	93.2	41.5	162	148.0	65.9	222	202.8	90.3	282	257.6	114.7
43	39.3	17.5	103	94.1	41.9	163	148.9	66.3	223	203.7	90.7	283	258.5	115.1
44	40.2	17.9	104	95.0	42.3	164	149.8	66.7	224	204.6	91.1	284	259.4	115.5
45	41.1	18.3	105	95.9	42.7	165	150.7	67.1	225	205.5	91.5	285	260.4	115.9
46	42.0	18.7	106	96.8	43.1	166	151.6	67.5	226	206.5	91.9	286	261.3	116.3
47	42.9	19.1	107	97.7	43.5	167	152.6	67.9	227	207.4	92.3	287	262.2	116.7
48	43.9	19.5	108	98.7	43.9	168	153.5	68.3	228	208.3	92.7	288	263.1	117.1
49	44.8	19.9	109	99.6	44.3	169	154.4	68.7	229	209.2	93.1	289	264.0	117.5
50	45.7	20.3	110	100.5	44.7	170	155.3	69.1	230	210.1	93.5	290	264.9	118.0
51	46.6	20.7	111	101.4	45.1	171	156.2	69.6	231	211.0	94.0	291	265.8	118.4
52	47.5	21.2	112	102.3	45.6	172	157.1	70.0	232	211.9	94.4	292	266.8	118.8
53	48.4	21.6	113	103.2	46.0	173	158.0	70.4	233	212.9	94.8	293	267.7	119.2
54	49.3	22.0	114	104.1	46.4	174	159.0	70.8	234	213.8	95.2	294	268.6	119.6
55	50.2	22.4	115	105.1	46.8	175	159.9	71.2	235	214.7	95.6	295	269.5	120.0
56	51.2	22.8	116	106.0	47.2	176	160.8	71.6	236	215.6	96.0	296	270.4	120.4
57	52.1	23.2	117	106.9	47.6	177	161.7	72.0	237	216.5	96.4	297	271.3	120.8
58	53.0	23.6	118	107.8	48.0	178	162.6	72.4	238	217.4	96.8	298	272.2	121.2
59	53.9	24.0	119	108.7	48.4	179	163.5	72.8	239	218.3	97.2	299	273.2	121.6
60	54.8	24.4	120	109.6	48.8	180	164.4	73.2	240	219.3	97.6	300	274.1	122.0

Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 25 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.4	61	55.3	25.8	121	109.7	51.1	181	164.0	76.5	241	218.4	101.9
2	1.8	0.8	62	56.2	26.2	122	110.6	51.6	182	164.9	76.9	242	219.3	102.3
3	2.7	1.3	63	57.1	26.6	123	111.5	52.0	183	165.9	77.3	243	220.2	102.7
4	3.6	1.7	64	58.0	27.0	124	112.4	52.4	184	166.8	77.8	244	221.1	103.1
5	4.5	2.1	65	58.9	27.5	125	113.3	52.8	185	167.7	78.2	245	222.0	103.5
6	5.4	2.5	66	59.8	27.9	126	114.2	53.2	186	168.6	78.6	246	223.0	104.0
7	6.3	3.0	67	60.7	28.3	127	115.1	53.7	187	169.5	79.0	247	223.9	104.4
8	7.3	3.4	68	61.6	28.7	128	116.0	54.1	188	170.4	79.5	248	224.8	104.8
9	8.2	3.8	69	62.5	29.2	129	116.9	54.5	189	171.3	79.9	249	225.7	105.2
10	9.1	4.2	70	63.4	29.6	130	117.8	54.9	190	172.2	80.3	250	226.6	105.7
11	10.0	4.6	71	64.3	30.0	131	118.7	55.4	191	173.1	80.7	251	227.5	106.1
12	10.9	5.1	72	65.3	30.4	132	119.6	55.8	192	174.0	81.1	252	228.4	106.5
13	11.8	5.5	73	66.2	30.9	133	120.5	56.2	193	174.9	81.6	253	229.3	106.9
14	12.7	5.9	74	67.1	31.3	134	121.4	56.6	194	175.8	82.0	254	230.2	107.3
15	13.6	6.3	75	68.0	31.7	135	122.4	57.1	195	176.7	82.4	255	231.1	107.8
16	14.5	6.8	76	68.9	32.1	136	123.3	57.5	196	177.6	82.8	256	232.0	108.2
17	15.4	7.2	77	69.8	32.5	137	124.2	57.9	197	178.5	83.3	257	232.9	108.6
18	16.3	7.6	78	70.7	33.0	138	125.1	58.3	198	179.4	83.7	258	233.8	109.0
19	17.2	8.0	79	71.6	33.4	139	126.0	58.7	199	180.4	84.1	259	234.7	109.5
20	18.1	8.5	80	72.5	33.8	140	126.9	59.2	200	181.3	84.5	260	235.6	109.9
21	19.0	8.9	81	73.4	34.2	141	127.8	59.6	201	182.2	84.9	261	236.5	110.3
22	19.9	9.3	82	74.3	34.7	142	128.7	60.0	202	183.1	85.4	262	237.5	110.7
23	20.8	9.7	83	75.2	35.1	143	129.6	60.4	203	184.0	85.8	263	238.4	111.1
24	21.8	10.1	84	76.1	35.5	144	130.5	60.9	204	184.9	86.2	264	239.3	111.6
25	22.7	10.6	85	77.0	35.9	145	131.4	61.3	205	185.8	86.6	265	240.2	112.0
26	23.6	11.0	86	77.8	36.3	146	132.3	61.7	206	186.7	87.1	266	241.1	112.4
27	24.5	11.4	87	78.9	36.8	147	133.2	62.1	207	187.6	87.5	267	242.0	112.8
28	25.4	11.8	88	79.8	37.2	148	134.1	62.5	208	188.5	87.9	268	242.9	113.3
29	26.3	12.3	89	80.7	37.6	149	135.0	63.0	209	189.4	88.3	269	243.8	113.7
30	27.2	12.7	90	81.6	38.0	150	135.9	63.4	210	190.3	88.7	270	244.7	114.1
31	28.1	13.1	91	82.5	38.5	151	136.9	63.8	211	191.2	89.2	271	245.6	114.5
32	29.0	13.5	92	83.4	38.9	152	137.8	64.2	212	192.1	89.6	272	246.5	115.0
33	29.9	13.9	93	84.3	39.3	153	138.7	64.7	213	193.0	90.0	273	247.4	115.4
34	30.8	14.4	94	85.2	39.7	154	139.6	65.1	214	193.9	90.4	274	248.3	115.8
35	31.7	14.8	95	86.1	40.1	155	140.5	65.5	215	194.9	90.9	275	249.2	116.2
36	32.6	15.2	96	87.0	40.6	156	141.4	65.9	216	195.8	91.3	276	250.1	116.6
37	33.5	15.6	97	87.9	41.0	157	142.3	66.4	217	196.7	91.7	277	251.0	117.1
38	34.4	16.1	98	88.8	41.4	158	143.2	66.8	218	197.6	92.1	278	252.0	117.5
39	35.3	16.5	99	89.7	41.8	159	144.1	67.2	219	198.5	92.6	279	252.9	117.9
40	36.3	16.9	100	90.6	42.3	160	145.0	67.6	220	199.4	93.0	280	253.8	118.3
41	37.2	17.3	101	91.5	42.7	161	145.9	68.0	221	200.3	93.4	281	254.7	118.8
42	38.1	17.7	102	92.4	43.1	162	146.8	68.5	222	201.2	93.8	282	255.6	119.2
43	39.0	18.2	103	93.3	43.5	163	147.7	68.9	223	202.1	94.2	283	256.5	119.6
44	39.9	18.6	104	94.3	44.0	164	148.6	69.3	224	203.0	94.7	284	257.4	120.0
45	40.8	19.0	105	95.2	44.4	165	149.5	69.7	225	203.9	95.1	285	258.3	120.4
46	41.7	19.4	106	96.1	44.8	166	150.4	70.2	226	204.8	95.5	286	259.2	120.9
47	42.6	19.9	107	97.0	45.2	167	151.4	70.6	227	205.7	95.9	287	260.1	121.3
48	43.5	20.3	108	97.9	45.6	168	152.3	71.0	228	206.6	96.4	288	261.0	121.7
49	44.4	20.7	109	98.8	46.1	169	153.2	71.4	229	207.5	96.8	289	261.9	122.1
50	45.3	21.1	110	99.7	46.5	170	154.1	71.8	230	208.5	97.2	290	262.8	122.6
51	46.2	21.6	111	100.6	46.9	171	155.0	72.3	231	209.4	97.6	291	263.7	123.0
52	47.1	22.0	112	101.5	47.3	172	155.9	72.7	232	210.3	98.0	292	264.6	123.4
53	48.0	22.4	113	102.4	47.8	173	156.8	73.1	233	211.2	98.5	293	265.5	123.8
54	48.9	22.8	114	103.3	48.2	174	157.7	73.5	234	212.1	98.9	294	266.5	124.2
55	49.8	23.2	115	104.2	48.6	175	158.6	74.0	235	213.0	99.3	295	267.4	124.7
56	50.8	23.7	116	105.1	49.0	176	159.5	74.4	236	213.9	99.7	296	268.3	125.1
57	51.7	24.1	117	106.0	49.4	177	160.4	74.8	237	214.8	100.2	297	269.2	125.5
58	52.6	24.5	118	106.9	49.9	178	161.3	75.2	238	215.7	100.6	298	270.1	125.9
59	53.5	25.0	119	107.9	50.3	179	162.2	75.6	239	216.6	101.0	299	271.0	126.4
60	54.4	25.4	120	108.8	50.7	180	163.1	76.1	240	217.5	101.4	300	271.9	126.8
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 65 Degrees.

TABLE IX.

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Difference of Latitude and Departure for 26 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.4	61	54.8	26.7	121	108.8	53.0	181	162.7	79.3	241	216.6	105.6
2	1.8	0.9	62	55.7	27.2	122	109.7	53.5	182	163.6	79.8	242	217.5	106.1
3	2.7	1.3	63	56.6	27.6	123	110.6	53.9	183	164.5	80.2	243	218.4	106.5
4	3.6	1.8	64	57.5	28.1	124	111.5	54.4	184	165.4	80.7	244	219.3	107.0
5	4.5	2.2	65	58.4	28.5	125	112.3	54.8	185	166.3	81.1	245	220.2	107.4
6	5.4	2.6	66	59.3	28.9	126	113.2	55.2	186	167.2	81.5	246	221.1	107.8
7	6.3	3.1	67	60.2	29.4	127	114.1	55.7	187	168.1	82.0	247	222.0	108.3
8	7.2	3.5	68	61.1	29.8	128	115.0	56.1	188	169.0	82.4	248	222.9	108.7
9	8.1	3.9	69	62.0	30.2	129	115.9	56.5	189	169.9	82.9	249	223.8	109.2
10	9.0	4.4	70	62.9	30.7	130	116.8	57.0	190	170.8	83.3	250	224.7	109.6
11	9.9	4.8	71	63.8	31.1	131	117.7	57.4	191	171.7	83.7	251	225.6	110.0
12	10.8	5.3	72	64.7	31.6	132	118.6	57.9	192	172.6	84.2	252	226.5	110.5
13	11.7	5.7	73	65.6	32.0	133	119.5	58.3	193·	173.5	84.6	253	227.4	110.9
14	12.6	6.1	74	66.5	32.4	134	120.4	58.7	194	174.4	85.0	254	228.3	111.3
15	13.5	6.6	75	67.4	32.9	135	121.3	59.2	195	175.3	85.5	255	229.2	111.8
16	14.4	7.0	76	68.3	33.3	136	122.2	59.6	196	176.2	85.9	256	230.1	112.2
17	15.3	7.5	77	69.2	33.8	137	123.1	60.1	197	177.1	86.4	257	231.0	112.7
18	16.2	7.9	78	70.1	34.2	138	124.0	60.5	198	178.0	86.8	258	231.9	113.1
19	17.1	8.3	79	71.0	34.6	139	124.9	60.9	199	178.9	87.2	259	232.8	113.5
20	18.0	8.8	80	71.9	35.1	140	125.8	61.4	200	179.8	87.7	260	233.7	114.0
21	18.9	9.2	81	72.8	35.5	141	126.7	61.8	201	180.7	88.1	261	234.6	114.4
22	19.8	9.6	82	73.7	35.9	142	127.6	62.2	202	181.6	88.6	262	235.5	114.9
23	20.7	10.1	83	74.6	36.4	143	128.5	62.7	203	182.5	89.0	263	236.4	115.3
24	21.6	10.5	84	75.5	36.8	144	129.4	63.1	204	183.4	89.4	264	237.3	115.7
25	22.5	11.0	85	76.4	37.3	145	130.3	63.6	205	184.3	89.9	265	238.2	116.2
26	23.4	11.4	86	77.3	37.7	146	131.2	64.0	206	185.2	90.3	266	239.1	116.6
27	24.3	11.8	87	78.2	38.1	147	132.1	64.4	207	186.1	90.7	267	240.0	117.0
28	25.2	12.3	88	79.1	38.6	148	133.0	64.9	208	186.9	91.2	268	240.9	117.5
29	26.1	12.7	89	80.0	39.0	149	133.9	65.3	209	187.8	91.6	269	241.8	117.9
30	27.0	13.2	90	80.9	39.5	150	134.8	65.8	210	188.7	92.1	270	242.7	118.4
31	27.9	13.6	91	81.8	39.9	151	135.7	66.2	211	189.6	92.5	271	243.6	118.8
32	28.8	14.0	92	82.7	40.3	152	136.6	66.6	212	190.5	92.9	272	244.5	119.2
33	29.7	14.5	93	83.6	40.8	153	137.5	67.1	213	191.4	93.4	273	245.4	119.7
34	30.6	14.9	94	84.5	41.2	154	138.4	67.5	214	192.3	93.8	274	246.3	120.1
35	31.5	15.3	95	85.4	41.6	155	139.3	67.9	215	193.2	94.2	275	247.2	120.6
36	32.4	15.8	96	86.3	42.1	156	140.2	68.4	216	194.1	94.7	276	248.1	121.0
37	33.3	16.2	97	87.2	42.5	157	141.1	68.8	217	195.0	95.1	277	249.0	121.4
38	34.2	16.7	98	88.1	43.0	158	142.0	69.3	218	195.9	95.6	278	249.9	121.9
39	35.1	17.1	99	89.0	43.4	159	142.9	69.7	219	196.8	96.0	279	250.8	122.3
40	36.0	17.5	100	89.9	43.8	160	143.8	70.1	220	197.7	96.4	280	251.7	122.7
41	36.9	18.0	101	90.8	44.3	161	144.7	70.6	221	198.6	96.9	281	252.6	123.2
42	37.7	18.4	102	91.7	44.7	162	145.6	71.0	222	199.5	97.3	282	253.5	123.6
43	38.6	18.8	103	92.6	45.2	163	146.5	71.5	223	200.4	97.8	283	254.4	124.1
44	39.5	19.3	104	93.5	45.6	164	147.4	71.9	224	201.3	98.2	284	255.3	124.5
45	40.4	19.7	105	94.4	46.0	165	148.3	72.3	225	202.2	98.6	285	256.2	124.9
46	41.3	20.2	106	95.3	46.5	166	149.2	72.8	226	203.1	99.1	286	257.1	125.4
47	42.2	20.6	107	96.2	46.9	167	150.1	73.2	227	204.0	99.5	287	258.0	125.8
48	43.1	21.0	108	97.1	47.3	168	151.0	73.6	228	204.9	99.9	288	258.9	126.3
49	44.0	21.5	109	98.0	47.8	169	151.9	74.1	229	205.8	100.4	289	259.8	126.7
50	44.9	21.9	110	98.9	48.2	170	152.8	74.5	230	206.7	100.8	290	260.7	127.1
51	45.8	22.4	111	99.8	48.7	171	153.7	75.0	231	207.6	101.3	291	261.5	127.6
52	46.7	22.8	112	100.7	49.1	172	154.6	75.4	232	208.5	101.7	292	262.4	128.0
53	47.6	23.2	113	101.6	49.5	173	155.5	75.8	233	209.4	102.1	293	263.3	128.4
54	48.5	23.7	114	102.5	50.0	174	156.4	76.3	234	210.3	102.6	294	264.2	128.9
55	49.4	24.1	115	103.4	50.4	175	157.3	76.7	235	211.2	103.0	295	265.1	129.3
56	50.3	24.5	116	104.3	50.9	176	158.2	77.2	236	212.1	103.5	296	266.0	129.8
57	51.2	25.0	117	105.2	51.3	177	159.1	77.6	237	213.0	103.9	297	266.9	130.2
58	52.1	25.4	118	106.1	51.7	178	160.0	78.0	238	213.9	104.3	298	267.8	130.6
59	53.0	25.9	119	107.0	52.2	179	160.9	78.5	239	214.8	104.8	299	268.7	131.1
60	53.9	26.3	120	107.9	52.6	180	161.8	78.9	240	215.7	105.2	300	269.6	131.5
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 64 Degrees.

TABLE IX.

Difference of Latitude and Departure for 27 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.5	61	54.4	27.7	121	107.8	54.9	181	161.3	82.2	241	214.7	109.4
2	1.8	0.9	62	55.2	28.1	122	108.7	55.4	182	162.2	82.6	242	215.6	109.9
3	2.7	1.4	63	56.1	28.6	123	109.6	55.8	183	163.1	83.1	243	216.5	110.3
4	3.6	1.8	64	57.0	29.1	124	110.5	56.3	184	163.9	83.5	244	217.4	110.8
5	4.5	2.3	65	57.9	29.5	125	111.4	56.7	185	164.8	84.0	245	218.3	111.2
6	5.3	2.7	66	58.8	30.0	126	112.3	57.2	186	165.7	84.4	246	219.2	111.7
7	6.2	3.2	67	59.7	30.4	127	113.2	57.7	187	166.6	84.9	247	220.1	112.1
8	7.1	3.6	68	60.6	30.9	128	114.0	58.1	188	167.5	85.4	248	221.0	112.6
9	8.0	4.1	69	61.5	31.3	129	114.9	58.6	189	168.4	85.8	249	221.9	113.0
10	8.9	4.5	70	62.4	31.8	130	115.8	59.0	190	169.3	86.3	250	222.8	113.5
11	9.8	5.0	71	63.3	32.2	131	116.7	59.5	191	170.2	86.7	251	223.6	114.0
12	10.7	5.4	72	64.2	32.7	132	117.6	59.9	192	171.1	87.2	252	224.5	114.4
13	11.6	5.9	73	65.0	33.1	133	118.5	60.4	193	172.0	87.6	253	225.4	114.9
14	12.5	6.4	74	65.9	33.6	134	119.4	60.8	194	172.9	88.1	254	226.3	115.3
15	13.4	6.8	75	66.8	34.0	135	120.3	61.3	195	173.7	88.5	255	227.2	115.8
16	14.3	7.3	76	67.7	34.5	136	121.2	61.7	196	174.6	89.0	256	228.1	116.2
17	15.1	7.7	77	68.6	35.0	137	122.1	62.2	197	175.5	89.4	257	229.0	116.7
18	16.0	8.2	78	69.5	35.4	138	123.0	62.7	198	176.4	89.9	258	229.9	117.1
19	16.9	8.6	79	70.4	35.9	139	123.8	63.1	199	177.3	90.3	259	230.8	117.6
20	17.8	9.1	80	71.3	36.3	140	124.7	63.6	200	178.2	90.8	260	231.7	118.0
21	18.7	9.5	81	72.2	36.8	141	125.6	64.0	201	179.1	91.3	261	232.6	118.5
22	19.6	10.0	82	73.1	37.2	142	126.5	64.5	202	180.0	91.7	262	233.4	118.9
23	20.5	10.4	83	74.0	37.7	143	127.4	64.9	203	180.9	92.2	263	234.3	119.4
24	21.4	10.9	84	74.8	38.1	144	128.3	65.4	204	181.8	92.6	264	235.2	119.9
25	22.3	11.3	85	75.7	38.6	145	129.2	65.8	205	182.7	93.1	265	236.1	120.3
26	23.2	11.8	86	76.6	39.0	146	130.1	66.3	206	183.5	93.5	266	237.0	120.8
27	24.1	12.3	87	77.5	39.5	147	131.0	66.7	207	184.4	94.0	267	237.9	121.2
28	24.9	12.7	88	78.4	40.0	148	131.9	67.2	208	185.3	94.4	268	238.8	121.7
29	25.8	13.2	89	79.3	40.4	149	132.8	67.6	209	186.2	94.9	269	239.7	122.1
30	26.7	13.6	90	80.2	40.9	150	133.7	68.1	210	187.1	95.3	270	240.6	122.6
31	27.6	14.1	91	81.1	41.3	151	134.5	68.6	211	188.0	95.8	271	241.5	123.0
32	28.5	14.5	92	82.0	41.8	152	135.4	69.0	212	188.9	96.2	272	242.4	123.5
33	29.4	15.0	93	82.9	42.2	153	136.3	69.5	213	189.8	96.7	273	243.2	123.9
34	30.3	15.4	94	83.8	42.7	154	137.2	69.9	214	190.7	97.2	274	244.1	124.4
35	31.2	15.9	95	84.6	43.1	155	138.1	70.4	215	191.6	97.6	275	245.0	124.8
36	32.1	16.3	96	85.5	43.6	156	139.0	70.8	216	192.5	98.1	276	245.9	125.3
37	33.0	16.8	97	86.4	44.0	157	139.9	71.3	217	193.3	98.5	277	246.8	125.8
38	33.9	17.3	98	87.3	44.5	158	140.8	71.7	218	194.2	99.0	278	247.7	126.2
39	34.7	17.7	99	88.2	44.9	159	141.7	72.2	219	195.1	99.4	279	248.6	126.7
40	35.6	18.2	100	89.1	45.4	160	142.6	72.6	220	196.0	99.9	280	249.5	127.1
41	36.5	18.6	101	90.0	45.9	161	143.5	73.1	221	196.9	100.3	281	250.4	127.6
42	37.4	19.1	102	90.9	46.3	162	144.3	73.5	222	197.8	100.8	282	251.3	128.0
43	38.3	19.5	103	91.8	46.8	163	145.2	74.0	223	198.7	101.2	283	252.2	128.5
44	39.2	20.0	104	92.7	47.2	164	146.1	74.5	224	199.6	101.7	284	253.0	128.9
45	40.1	20.4	105	93.6	47.7	165	147.0	74.9	225	200.5	102.1	285	253.9	129.4
46	41.0	20.9	106	94.4	48.1	166	147.9	75.4	226	201.4	102.6	286	254.8	129.8
47	41.9	21.3	107	95.3	48.6	167	148.8	75.8	227	202.3	103.1	287	255.7	130.3
48	42.8	21.8	108	96.2	49.0	168	149.7	76.3	228	203.1	103.5	288	256.6	130.7
49	43.7	22.2	109	97.1	49.5	169	150.6	76.7	229	204.0	104.0	289	257.5	131.2
50	44.6	22.7	110	98.0	49.9	170	151.5	77.2	230	204.9	104.4	290	258.4	131.7
51	45.4	23.2	111	98.9	50.4	171	152.4	77.6	231	205.8	104.9	291	259.3	132.1
52	46.3	23.6	112	99.8	50.8	172	153.3	78.1	232	206.7	105.3	292	260.2	132.6
53	47.2	24.1	113	100.7	51.3	173	154.1	78.5	233	207.6	105.8	293	261.1	133.0
54	48.1	24.5	114	101.6	51.8	174	155.0	79.0	234	208.5	106.2	294	262.0	133.5
55	49.0	25.0	115	102.5	52.2	175	155.9	79.4	235	209.4	106.7	295	262.8	133.9
56	49.9	25.4	116	103.4	52.7	176	156.8	79.9	236	210.3	107.1	296	263.7	134.4
57	50.8	25.9	117	104.2	53.1	177	157.7	80.4	237	211.2	107.6	297	264.6	134.8
58	51.7	26.3	118	105.1	53.6	178	158.6	80.8	238	212.1	108.0	298	265.5	135.3
59	52.6	26.8	119	106.0	54.0	179	159.5	81.3	239	213.0	108.5	299	266.4	135.7
60	53.5	27.2	120	106.9	54.5	180	160.4	81.7	240	213.8	109.0	300	267.3	136.2
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 63 Degrees.

TABLE IX. 105

Difference of Latitude and Departure for 28 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.5	61	53.9	28.6	121	106.8	56.8	181	159.8	85.0	241	212.8	113.1
2	1.8	0.9	62	54.7	29.1	122	107.7	57.3	182	160.7	85.4	242	213.7	113.6
3	2.6	1.4	63	55.6	29.6	123	108.6	57.7	183	161.6	85.9	243	214.6	114.1
4	3.5	1.9	64	56.5	30.0	124	109.5	58.2	184	162.5	86.4	244	215.4	114.6
5	4.4	2.3	65	57.4	30.5	125	110.4	58.7	185	163.3	86.9	245	216.3	115.0
6	5.3	2.8	66	58.3	31.0	126	111.3	59.2	186	164.2	87.3	246	217.2	115.5
7	6.2	3.3	67	59.2	31.5	127	112.1	59.6	187	165.1	87.8	247	218.1	116.0
8	7.1	3.8	68	60.0	31.9	128	113.0	60.1	188	166.0	88.3	248	219.0	116.4
9	7.9	4.2	69	60.9	32.4	129	113.9	60.6	189	166.9	88.7	249	219.9	116.9
10	8.8	4.7	70	61.8	32.9	130	114.8	61.0	190	167.8	89.2	250	220.7	117.4
11	9.7	5.2	71	62.7	33.3	131	115.7	61.5	191	168.6	89.7	251	221.6	117.8
12	10.6	5.6	72	63.6	33.8	132	116.5	62.0	192	169.5	90.1	252	222.5	118.3
13	11.5	6.1	73	64.5	34.3	133	117.4	62.4	193	170.4	90.6	253	223.4	118.8
14	12.4	6.6	74	65.3	34.7	134	118.3	62.9	194	171.3	91.1	254	224.3	119.2
15	13.2	7.0	75	66.2	35.2	135	119.2	63.4	195	172.2	91.5	255	225.2	119.7
16	14.1	7.5	76	67.1	35.7	136	120.1	63.8	196	173.1	92.0	256	226.0	120.2
17	15.0	8.0	77	68.0	36.1	137	121.0	64.3	197	173.9	92.5	257	226.9	120.7
18	15.9	8.5	78	68.9	36.6	138	121.8	64.8	198	174.8	93.0	258	227.8	121.1
19	16.8	8.9	79	69.8	37.1	139	122.7	65.3	199	175.7	93.4	259	228.7	121.6
20	17.7	9.4	80	70.6	37.6	140	123.6	65.7	200	176.6	93.9	260	229.6	122.1
21	18.5	9.9	81	71.5	38.0	141	124.5	66.2	201	177.5	94.4	261	230.4	122.5
22	19.4	10.3	82	72.4	38.5	142	125.4	66.7	202	178.4	94.8	262	231.3	123.0
23	20.3	10.8	83	73.3	39.0	143	126.3	67.1	203	179.2	95.3	263	232.2	123.5
24	21.2	11.3	84	74.2	39.4	144	127.1	67.6	204	180.1	95.8	264	233.1	123.9
25	22.1	11.7	85	75.1	39.9	145	128.0	68.1	205	181.0	96.2	265	234.0	124.4
26	23.0	12.2	86	75.9	40.4	146	128.9	68.5	206	181.9	96.7	266	234.9	124.9
27	23.8	12.7	87	76.8	40.8	147	129.8	69.0	207	182.8	97.2	267	235.7	125.3
28	24.7	13.1	88	77.7	41.3	148	130.7	69.5	208	183.7	97.7	268	236.6	125.8
29	25.6	13.6	89	78.6	41.8	149	131.6	70.0	209	184.5	98.1	269	237.5	126.3
30	26.5	14.1	90	79.5	42.3	150	132.4	70.4	210	185.4	98.6	270	238.4	126.8
31	27.4	14.6	91	80.3	42.7	151	133.3	70.9	211	186.3	99.1	271	239.3	127.2
32	28.3	15.0	92	81.2	43.2	152	134.2	71.4	212	187.2	99.5	272	240.2	127.7
33	29.1	15.5	93	82.1	43.7	153	135.1	71.8	213	188.1	100.0	273	241.0	128.2
34	30.0	16.0	94	83.0	44.1	154	136.0	72.3	214	189.0	100.5	274	241.9	128.6
35	30.9	16.4	95	83.9	44.6	155	136.9	72.8	215	189.8	100.9	275	242.8	129.1
36	31.8	16.9	96	84.8	45.1	156	137.7	73.2	216	190.7	101.4	276	243.7	129.6
37	32.7	17.4	97	85.6	45.5	157	138.6	73.7	217	191.6	101.9	277	244.6	130.0
38	33.6	17.8	98	86.5	46.0	158	139.5	74.2	218	192.5	102.3	278	245.5	130.5
39	34.4	18.3	99	87.4	46.5	159	140.4	74.6	219	193.4	102.8	279	246.3	131.0
40	35.3	18.8	100	88.3	46.9	160	141.3	75.1	220	194.2	103.3	280	247.2	131.5
41	36.2	19.2	101	89.2	47.4	161	142.2	75.6	221	195.1	103.8	281	248.1	131.9
42	37.1	19.7	102	90.1	47.9	162	143.0	76.1	222	196.0	104.2	282	249.0	132.4
43	38.0	20.2	103	90.9	48.4	163	143.9	76.5	223	196.9	104.7	283	249.9	132.9
44	38.8	20.7	104	91.8	48.8	164	144.8	77.0	224	197.8	105.2	284	250.8	133.3
45	39.7	21.1	105	92.7	49.3	165	145.7	77.5	225	198.7	105.6	285	251.6	133.8
46	40.6	21.6	106	93.6	49.8	166	146.6	77.9	226	199.5	106.1	286	252.5	134.3
47	41.5	22.1	107	94.5	50.2	167	147.5	78.4	227	200.4	106.6	287	253.4	134.7
48	42.4	22.5	108	95.4	50.7	168	148.3	78.9	228	201.3	107.0	288	254.3	135.2
49	43.3	23.0	109	96.2	51.2	169	149.2	79.3	229	202.2	107.5	289	255.2	135.7
50	44.1	23.5	110	97.1	51.6	170	150.1	79.8	230	203.1	108.0	290	256.1	136.1
51	45.0	23.9	111	98.0	52.1	171	151.0	80.3	231	204.0	108.4	291	256.9	136.6
52	45.9	24.4	112	98.9	52.6	172	151.9	80.7	232	204.8	108.9	292	257.8	137.1
53	46.8	24.9	113	99.8	53.1	173	152.7	81.2	233	205.7	109.4	293	258.7	137.6
54	47.7	25.4	114	100.7	53.5	174	153.6	81.7	234	206.6	109.9	294	259.6	138.0
55	48.6	25.8	115	101.5	54.0	175	154.5	82.2	235	207.5	110.3	295	260.5	138.5
56	49.4	26.3	116	102.4	54.5	176	155.4	82.6	236	208.4	110.8	296	261.4	139.0
57	50.3	26.8	117	103.3	54.9	177	156.3	83.1	237	209.3	111.3	297	262.2	139.4
58	51.2	27.2	118	104.2	55.4	178	157.2	83.6	238	210.1	111.7	298	263.1	139.9
59	52.1	27.7	119	105.1	55.9	179	158.0	84.0	239	211.0	112.2	299	264.0	140.4
60	53.0	28.2	120	106.0	56.3	180	158.9	84.5	240	211.9	112.7	300	264.9	140.8
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 62 Degrees.

TABLE IX.

Difference of Latitude and Departure for 29 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.5	61	53.4	29.6	121	105.8	58.7	181	158.3	87.8	241	210.8	116.8
2	1.7	1.0	62	54.2	30.1	122	106.7	59.1	182	159.2	88.2	242	211.7	117.3
3	2.6	1.5	63	55.1	30.5	123	107.6	59.6	183	160.1	88.7	243	212.5	117.8
4	3.5	1.9	64	56.0	31.0	124	108.5	60.1	184	160.9	89.2	244	213.4	118.3
5	4.4	2.4	65	56.9	31.5	125	109.3	60.6	185	161.8	89.7	245	214.3	118.8
6	5.2	2.9	66	57.7	32.0	126	110.2	61.1	186	162.7	90.2	246	215.2	119.3
7	6.1	3.4	67	58.6	32.5	127	111.1	61.6	187	163.6	90.7	247	216.0	119.7
8	7.0	3.9	68	59.5	33.0	128	112.0	62.1	188	164.4	91.1	248	216.9	120.2
9	7.9	4.4	69	60.3	33.5	129	112.8	62.5	189	165.3	91.6	249	217.8	120.7
10	8.7	4.8	70	61.2	33.9	130	113.7	63.0	190	166.2	92.1	250	218.7	121.2
11	9.6	5.3	71	62.1	34.4	131	114.6	63.5	191	167.1	92.6	251	219.5	121.7
12	10.5	5.8	72	63.0	34.9	132	115.4	64.0	192	167.9	93.1	252	220.4	122.2
13	11.4	6.3	73	63.8	35.4	133	116.3	64.5	193	168.8	93.6	253	221.3	122.7
14	12.2	6.8	74	64.7	35.9	134	117.2	65.0	194	169.7	94.1	254	222.2	123.1
15	13.1	7.3	75	65.6	36.4	135	118.1	65.4	195	170.6	94.5	255	223.0	123.6
16	14.0	7.8	76	66.5	36.8	136	118.9	65.9	196	171.4	95.0	256	223.9	124.1
17	14.9	8.2	77	67.3	37.3	137	119.8	66.4	197	172.3	95.5	257	224.8	124.6
18	15.7	8.7	78	68.2	37.8	138	120.7	66.9	198	173.2	96.0	258	225.7	125.1
19	16.6	9.2	79	69.1	38.3	139	121.6	67.4	199	174.0	96.5	259	226.5	125.6
20	17.5	9.7	80	70.0	38.8	140	122.4	67.9	200	174.9	97.0	260	227.4	126.1
21	18.4	10.2	81	70.8	39.3	141	123.3	68.4	201	175.8	97.4	261	228.3	126.5
22	19.2	10.7	82	71.7	39.8	142	124.2	68.8	202	176.7	97.9	262	229.2	127.0
23	20.1	11.2	83	72.6	40.2	143	125.1	69.3	203	177.5	98.4	263	230.0	127.5
24	21.0	11.6	84	73.5	40.7	144	125.9	69.8	204	178.4	98.9	264	230.9	128.0
25	21.9	12.1	85	74.3	41.2	145	126.8	70.3	205	179.3	99.4	265	231.8	128.5
26	22.7	12.6	86	75.2	41.7	146	127.7	70.8	206	180.2	99.9	266	232.6	129.0
27	23.6	13.1	87	76.1	42.2	147	128.6	71.3	207	181.0	100.4	267	233.5	129.4
28	24.5	13.6	88	77.0	42.7	148	129.4	71.8	208	181.9	100.8	268	234.4	129.9
29	25.4	14.1	89	77.8	43.1	149	130.3	72.2	209	182.8	101.3	269	235.3	130.4
30	26.2	14.5	90	78.7	43.6	150	131.2	72.7	210	183.7	101.8	270	236.1	130.9
31	27.1	15.0	91	79.6	44.1	151	132.1	73.2	211	184.5	102.3	271	237.0	131.4
32	28.0	15.5	92	80.5	44.6	152	132.9	73.7	212	185.4	102.8	272	237.9	131.9
33	28.9	16.0	93	81.3	45.1	153	133.8	74.2	213	186.3	103.3	273	238.8	132.4
34	29.7	16.5	94	82.2	45.6	154	134.7	74.7	214	187.2	103.7	274	239.6	132.8
35	30.6	17.0	95	83.1	46.1	155	135.6	75.1	215	188.0	104.2	275	240.5	133.3
36	31.5	17.5	96	84.0	46.5	156	136.4	75.6	216	188.9	104.7	276	241.4	133.8
37	32.4	17.9	97	84.8	47.0	157	137.3	76.1	217	189.8	105.2	277	242.3	134.3
38	33.2	18.4	98	85.7	47.5	158	138.2	76.6	218	190.7	105.7	278	243.1	134.8
39	34.1	18.9	99	86.6	48.0	159	139.1	77.1	219	191.5	106.2	279	244.0	135.3
40	35.0	19.4	100	87.5	48.5	160	139.9	77.6	220	192.4	106.7	280	244.9	135.7
41	35.9	19.9	101	88.3	49.0	161	140.8	78.1	221	193.3	107.1	281	245.8	136.2
42	36.7	20.4	102	89.2	49.5	162	141.7	78.5	222	194.2	107.6	282	246.6	136.7
43	37.6	20.8	103	90.1	49.9	163	142.6	79.0	223	195.0	108.1	283	247.5	137.2
44	38.5	21.3	104	91.0	50.4	164	143.4	79.5	224	195.9	108.6	284	248.4	137.7
45	39.4	21.8	105	91.8	50.9	165	144.3	80.0	225	196.8	109.1	285	249.3	138.2
46	40.2	22.3	106	92.7	51.4	166	145.2	80.5	226	197.7	109.6	286	250.1	138.7
47	41.1	22.8	107	93.6	51.9	167	146.1	81.0	227	198.5	110.1	287	251.0	139.1
48	42.0	23.3	108	94.5	52.4	168	146.9	81.4	228	199.4	110.5	288	251.9	139.6
49	42.9	23.8	109	95.3	52.8	169	147.8	81.9	229	200.3	111.0	289	252.8	140.1
50	43.7	24.2	110	96.2	53.3	170	148.7	82.4	230	201.2	111.5	290	253.6	140.6
51	44.6	24.7	111	97.1	53.8	171	149.6	82.9	231	202.0	112.0	291	254.5	141.1
52	45.5	25.2	112	98.0	54.3	172	150.4	83.4	232	202.9	112.5	292	255.4	141.6
53	46.4	25.7	113	98.8	54.8	173	151.3	83.9	233	203.8	113.0	293	256.3	142.0
54	47.2	26.2	114	99.7	55.3	174	152.2	84.4	234	204.7	113.4	294	257.1	142.5
55	48.1	26.7	115	100.6	55.8	175	153.1	84.8	235	205.5	113.9	295	258.0	143.0
56	49.0	27.1	116	101.5	56.2	176	153.9	85.3	236	206.4	114.4	296	258.9	143.5
57	49.9	27.6	117	102.3	56.7	177	154.8	85.8	237	207.3	114.9	297	259.8	144.0
58	50.7	28.1	118	103.2	57.2	178	155.7	86.3	238	208.2	115.4	298	260.6	144.5
59	51.6	28.6	119	104.1	57.7	179	156.6	86.8	239	209.0	115.9	299	261.5	145.0
60	52.5	29.1	120	105.0	58.2	180	157.4	87.3	240	209.9	116.4	300	262.4	145.4

Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

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Difference of Latitude and Departure for 30 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.5	61	52.8	30.5	121	104.8	60.5	181	156.8	90.5	241	208.7	120.5
2	1.7	1.0	62	53.7	31.0	122	105.7	61.0	182	157.6	91.0	242	209.6	121.0
3	2.6	1.5	63	54.6	31.5	123	106.5	61.5	183	158.5	91.5	243	210.4	121.5
4	3.5	2.0	64	55.4	32.0	124	107.4	62.0	184	159.3	92.0	244	211.3	122.0
5	4.3	2.5	65	56.3	32.5	125	108.3	62.5	185	160.2	92.5	245	212.2	122.5
6	5.2	3.0	66	57.2	33.0	126	109.1	63.0	186	161.1	93.0	246	213.0	123.0
7	6.1	3.5	67	58.0	33.5	127	110.0	63.5	187	161.9	93.5	247	213.9	123.5
8	6.9	4.0	68	58.9	34.0	128	110.9	64.0	188	162.8	94.0	248	214.8	124.0
9	7.8	4.5	69	59.8	34.5	129	111.7	64.5	189	163.7	94.5	249	215.6	124.5
10	8.7	5.0	70	60.6	35.0	130	112.6	65.0	190	164.5	95.0	250	216.5	125.0
11	9.5	5.5	71	61.5	35.5	131	113.4	65.5	191	165.4	95.5	251	217.4	125.5
12	10.4	6.0	72	62.4	36.0	132	114.3	66.0	192	166.3	96.0	252	218.2	126.0
13	11.3	6.5	73	63.2	36.5	133	115.2	66.5	193	167.1	96.5	253	219.1	126.5
14	12.1	7.0	74	64.1	37.0	134	116.0	67.0	194	168.0	97.0	254	220.0	127.0
15	13.0	7.5	75	65.0	37.5	135	116.9	67.5	195	168.9	97.5	255	220.8	127.5
16	13.9	8.0	76	65.8	38.0	136	117.8	68.0	196	169.7	98.0	256	221.7	128.0
17	14.7	8.5	77	66.7	38.5	137	118.6	68.5	197	170.6	98.5	257	222.6	128.5
18	15.6	9.0	78	67.5	39.0	138	119.5	69.0	198	171.5	99.0	258	223.4	129.0
19	16.5	9.5	79	68.4	39.5	139	120.4	69.5	199	172.3	99.5	259	224.3	129.5
20	17.3	10.0	80	69.3	40.0	140	121.2	70.0	200	173.2	100.0	260	225.2	130.0
21	18.2	10.5	81	70.1	40.5	141	122.1	70.5	201	174.1	100.5	261	226.0	130.5
22	19.1	11.0	82	71.0	41.0	142	123.0	71.0	202	174.9	101.0	262	226.9	131.0
23	19.9	11.5	83	71.9	41.5	143	123.8	71.5	203	175.8	101.5	263	227.8	131.5
24	20.8	12.0	84	72.7	42.0	144	124.7	72.0	204	176.7	102.0	264	228.6	132.0
25	21.7	12.5	85	73.6	42.5	145	125.6	72.5	205	177.5	102.5	265	229.5	132.5
26	22.5	13.0	86	74.5	43.0	146	126.4	73.0	206	178.4	103.0	266	230.4	133.0
27	23.4	13.5	87	75.3	43.5	147	127.3	73.5	207	179.3	103.5	267	231.2	133.5
28	24.2	14.0	88	76.2	44.0	148	128.2	74.0	208	180.1	104.0	268	232.1	134.0
29	25.1	14.5	89	77.1	44.5	149	129.0	74.5	209	181.0	104.5	269	233.0	134.5
30	26.0	15.0	90	77.9	45.0	150	129.9	75.0	210	181.9	105.0	270	233.8	135.0
31	26,8	15.5	91	78.8	45.5	151	130.8	75.5	211	182.7	105.5	271	234.7	135.5
32	27.7	16.0	92	79.7	46.0	152	131.6	76.0	212	183.6	106.0	272	235.6	136.0
33	28.6	16.5	93	80.5	46.5	153	132.5	76.5	213	184.5	106.5	273	236.4	136.5
34	29.4	17.0	94	81.4	47.0	154	133.4	77.0	214	185.3	107.0	274	237.3	137.0
35	30.3	17.5	95	82.3	47.5	155	134.2	77.5	215	186.2	107.5	275	238.2	137.5
36	31.2	18.0	96	83.1	48.0	156	135.1	78.0	216	187.1	108.0	276	239.0	138.0
37	32.0	18.5	97	84.0	48.5	157	136.0	78.5	217	187.9	108.5	277	239.9	138.5
38	32.9	19.0	98	84.9	49.0	158	136.8	79.0	218	188.8	109.0	278	240.8	139.0
39	33.8	19.5	99	85.7	49.5	159	137.7	79.5	219	189.7	109.5	279	241.6	139.5
40	34.6	20.0	100	86.6	50.0	160	138.6	80.0	220	190.5	110.0	280	242.5	140.0
41	35.5	20.5	101	87.5	50.5	161	139.4	80.5	221	191.4	110.5	281	243.4	140.5
42	36.4	21.0	102	88.3	51.0	162	140.3	81.0	222	192.3	111.0	282	244.2	141.0
43	37.2	21.5	103	89.2	51.5	163	141.2	81.5	223	193.1	111.5	283	245.1	141.5
44	38.1	22.0	104	90.1	52.0	164	142.0	82.0	224	194.0	112.0	284	246.0	142.0
45	39.0	22.5	105	90.9	52.5	165	142.9	82.5	225	194.9	112.5	285	246.8	142.5
46	39.8	23.0	106	91.8	53.0	166	143.8	83.0	226	195.7	113.0	286	247.7	143.0
47	40.7	23.5	107	92.7	53.5	167	144.6	83.5	227	196.6	113.5	287	248.5	143.5
48	41.6	24.0	108	93.5	54.0	168	145.5	84.0	228	197.5	114.0	288	249.4	144.0
49	42.4	24.5	109	94.4	54.5	169	146.4	84.5	229	198.3	114.5	289	250.3	144.5
50	43.3	25.0	110	95.3	55.0	170	147.2	85.0	230	199.2	115.0	290	251.1	145.0
51	44.2	25.5	111	96.1	55.5	171	148.1	85.5	231	200.1	115.5	291	252.0	145.5
52	45.0	26.0	112	97.0	56.0	172	149.0	86.0	232	200.9	116.0	292	252.9	146.0
53	45.9	26.5	113	97.9	56.5	173	149.8	86.5	233	201.8	116.5	293	253.7	146.5
54	46.8	27.0	114	98.7	57.0	174	150.7	87.0	234	202.6	117.0	294	254.6	147.0
55	47.6	27.5	115	99.6	57.5	175	151.6	87.5	235	203.5	117.5	295	255.5	147.5
56	48.5	28.0	116	100.5	58.0	176	152.4	88.0	236	204.4	118.0	296	256.3	148.0
57	49.4	28.5	117	101.3	58.5	177	153.3	88.5	237	205.2	118.5	297	257.2	148.5
58	50.2	29.0	118	102.2	59.0	178	154.2	89.0	238	206.1	119.0	298	258.1	149.0
59	51.1	29.5	119	103.1	59.5	179	155.0	89.5	239	207.0	119.5	299	258.9	149.5
60	52.0	30.0	120	103.9	60.0	180	155.9	90.0	240	207.8	120.0	300	259.8	150.0
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 31 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.9	0.5	61	52.3	31.4	121	103.7	62.3	181	155.1	93.2	241	206.6	124.1
2	1.7	1.0	62	53.1	31.9	122	104.6	62.8	182	156.0	93.7	242	207.4	124.6
3	2.6	1.5	63	54.0	32.4	123	105.4	63.3	183	156.9	94.3	243	208.3	125.2
4	3.4	2.1	64	54.9	33.0	124	106.3	63.9	184	157.7	94.8	244	209.1	125.7
5	4.3	2.6	65	55.7	33.5	125	107.1	64.4	185	158.6	95.3	245	210.0	126.2
6	5.1	3.1	66	56.6	34.0	126	108.0	64.9	186	159.4	95.8	246	210.9	126.7
7	6.0	3.6	67	57.4	34.5	127	108.9	65.4	187	160.3	96.3	247	211.7	127.2
8	6.9	4.1	68	58.3	35.0	128	109.7	65.9	188	161.1	96.8	248	212.6	127.7
9	7.7	4.6	69	59.1	35.5	129	110.6	66.4	189	162.0	97.3	249	213.4	128.2
10	8.6	5.2	70	60.0	36.1	130	111.4	67.0	190	162.9	97.9	250	214.3	128.8
11	9.4	5.7	71	60.9	36.6	131	112.3	67.5	191	163.7	98.4	251	215.1	129.3
12	10.3	6.2	72	61.7	37.1	132	113.1	68.0	192	164.6	98.9	252	216.0	129.8
13	11.1	6.7	73	62.6	37.6	133	114.0	68.5	193	165.4	99.4	253	216.9	130.3
14	12.0	7.2	74	63.4	38.1	134	114.9	69.0	194	166.3	99.9	254	217.7	130.8
15	12.9	7.7	75	64.3	38.6	135	115.7	69.5	195	167.1	100.4	255	218.6	131.3
16	13.7	8.2	76	65.1	39.1	136	116.6	70.0	196	168.0	100.9	256	219.4	131.8
17	14.6	8.8	77	66.0	39.7	137	117.4	70.6	197	168.9	101.5	257	220.3	132.4
18	15.4	9.3	78	66.9	40.2	138	118.3	71.1	198	169.7	102.0	258	221.1	132.9
19	16.3	9.8	79	67.7	40.7	139	119.1	71.6	199	170.6	102.5	259	222.0	133.4
20	17.1	10.3	80	68.6	41.2	140	120.0	72.1	200	171.4	103.0	260	222.9	133.9
21	18.0	10.8	81	69.4	41.7	141	120.9	72.6	201	172.3	103.5	261	223.7	134.4
22	18.9	11.3	82	70.3	42.2	142	121.7	73.1	202	173.1	104.0	262	224.6	134.9
23	19.7	11.8	83	71.1	42.7	143	122.6	73.7	203	174.0	104.6	263	225.4	135.5
24	20.6	12.4	84	72.0	43.3	144	123.4	74.2	204	174.9	105.1	264	226.3	136.0
25	21.4	12.9	85	72.9	43.8	145	124.3	74.7	205	175.7	105.6	265	227.1	136.5
26	22.3	13.4	86	73.7	44.3	146	125.1	75.2	206	176.6	106.1	266	228.0	137.0
27	23.1	13.9	87	74.6	44.8	147	126.0	75.7	207	177.4	106.6	267	228.9	137.5
28	24.0	14.4	88	75.4	45.3	148	126.9	76.2	208	178.3	107.1	268	229.7	138.0
29	24.9	14.9	89	76.3	45.8	149	127.7	76.7	209	179.1	107.6	269	230.6	138.5
30	25.7	15.5	90	77.1	46.4	150	128.6	77.3	210	180.0	108.2	270	231.4	139.1
31	26.6	16.0	91	78.0	46.9	151	129.4	77.8	211	180.9	108.7	271	232.3	139.6
32	27.4	16.5	92	78.9	47.4	152	130.3	78.3	212	181.7	109.2	272	233.1	140.1
33	28.3	17.0	93	79.7	47.9	153	131.1	78.8	213	182.6	109.7	273	234.0	140.6
34	29.1	17.5	94	80.6	48.4	154	132.0	79.3	214	183.4	110.2	274	234.9	141.1
35	30.0	18.0	95	81.4	48.9	155	132.9	79.8	215	184.3	110.7	275	235.7	141.6
36	30.9	18.5	96	82.3	49.4	156	133.7	80.3	216	185.1	111.2	276	236.6	142.2
37	31.7	19.1	97	83.1	50.0	157	134.6	80.9	217	186.0	111.8	277	237.4	142.7
38	32.6	19.6	98	84.0	50.5	158	135.4	81.4	218	186.9	112.3	278	238.3	143.2
39	33.4	20.1	99	84.9	51.0	159	136.3	81.9	219	187.7	112.8	279	239.1	143.7
40	34.3	20.6	100	85.7	51.5	160	137.1	82.4	220	188.6	113.3	280	240.0	144.2
41	35.1	21.1	101	86.6	52.0	161	138.0	82.9	221	189.4	113.8	281	240.9	144.7
42	36.0	21.6	102	87.4	52.5	162	138.9	83.4	222	190.3	114.3	282	241.7	145.2
43	36.9	22.1	103	88.3	53.0	163	139.7	84.0	223	191.1	114.9	283	242.6	145.8
44	37.7	22.7	104	89.1	53.6	164	140.6	84.5	224	192.0	115.4	284	243.4	146.3
45	38.6	23.2	105	90.0	54.1	165	141.4	85.0	225	192.9	115.9	285	244.3	146.8
46	39.4	23.7	106	90.9	54.6	166	142.3	85.5	226	193.7	116.4	286	245.1	147.3
47	40.3	24.2	107	91.7	55.1	167	143.1	86.0	227	194.6	116.9	287	246.0	147.8
48	41.1	24.7	108	92.6	55.6	168	144.0	86.5	228	195.4	117.4	288	246.9	148.3
49	42.0	25.2	109	93.4	56.1	169	144.9	87.0	229	196.3	117.9	289	247.7	148.8
50	42.9	25.8	110	94.3	56.7	170	145.7	87.6	230	197.1	118.5	290	248.6	149.4
51	43.7	26.3	111	95.1	57.2	171	146.6	88.1	231	198.0	119.0	291	249.4	149.9
52	44.6	26.8	112	96.0	57.7	172	147.4	88.6	232	198.9	119.5	292	250.3	150.4
53	45.4	27.3	113	96.9	58.2	173	148.3	89.1	233	199.7	120.0	293	251.2	150.9
54	46.3	27.8	114	97.7	58.7	174	149.1	89.6	234	200.6	120.5	294	252.0	151.4
55	47.1	28.3	115	98.6	59.2	175	150.0	90.1	235	201.4	121.0	295	252.9	151.9
56	48.0	28.8	116	99.4	59.7	176	150.9	90.6	236	202.3	121.5	296	253.7	152.5
57	48.9	29.4	117	100.3	60.3	177	151.7	91.2	237	203.1	122.1	297	254.6	153.0
58	49.7	29.9	118	101.1	60.8	178	152.6	91.7	238	204.0	122.6	298	255.4	153.5
59	50.6	30.4	119	102.0	61.3	179	153.4	92.2	239	204.9	123.1	299	256.3	154.0
60	51.4	30.9	120	102.9	61.8	180	154.3	92.7	240	205.7	123.6	300	257.1	154.5
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

109

Difference of Latitude and Departure for 32 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.5	61	51.7	32.3	121	102.6	64.1	181	153.5	95.9	241	204.4	127.7
2	1.7	1.1	62	52.6	32.9	122	103.5	64.7	182	154.3	96.4	242	205.2	128.2
3	2.5	1.6	63	53.4	33.4	123	104.3	65.2	183	155.2	97.0	243	206.1	128.8
4	3.4	2.1	64	54.3	33.9	124	105.2	65.7	184	156.0	97.5	244	206.9	129.3
5	4.2	2.6	65	55.1	34.4	125	106.0	66.2	185	156.9	98.0	245	207.8	129.8
6	5.1	3.2	66	56.0	35.0	126	106.9	66.8	186	157.7	98.6	246	208.6	130.4
7	5.9	3.7	67	56.8	35.5	127	107.7	67.3	187	158.6	99.1	247	209.5	130.9
8	6.8	4.2	68	57.7	36.0	128	108.6	67.8	188	159.4	99.6	248	210.3	131.4
9	7.6	4.8	69	58.5	36.6	129	109.4	68.4	189	160.3	100.2	249	211.2	131.9
10	8.5	5.3	70	59.4	37.1	130	110.2	68.9	190	161.1	100.7	250	212.0	132.5
11	9.3	5.8	71	60.2	37.6	131	111.1	69.4	191	162.0	101.2	251	212.9	133.0
12	10.2	6.4	72	61.1	38.2	132	111.9	69.9	192	162.8	101.7	252	213.7	133.5
13	11.0	6.9	73	61.9	38.7	133	112.8	70.5	193	163.7	102.3	253	214.6	134.1
14	11.9	7.4	74	62.8	39.2	134	113.6	71.0	194	164.5	102.8	254	215.4	134.6
15	12.7	7.9	75	63.6	39.7	135	114.5	71.5	195	165.4	103.3	255	216.3	135.1
16	13.6	8.5	76	64.5	40.3	136	115.3	72.1	196	166.2	103.9	256	217.1	135.7
17	14.4	9.0	77	65.3	40.8	137	116.2	72.6	197	167.1	104.4	257	217.9	136.2
18	15.3	9.5	78	66.1	41.3	138	117.0	73.1	198	167.9	104.9	258	218.8	136.7
19	16.1	10.1	79	67.0	41.9	139	117.9	73.7	199	168.8	105.5	259	219.6	137.2
20	17.0	10.6	80	67.8	42.4	140	118.7	74.2	200	169.6	106.0	260	220.5	137.8
21	17.8	11.1	81	68.7	42.9	141	119.6	74.7	201	170.5	106.5	261	221.3	138.3
22	18.7	11.7	82	69.5	43.5	142	120.4	75.2	202	171.3	107.0	262	222.2	138.8
23	19.5	12.2	83	70.4	44.0	143	121.3	75.8	203	172.2	107.6	263	223.0	139.4
24	20.4	12.7	84	71.2	44.5	144	122.1	76.3	204	173.0	108.1	264	223.9	139.9
25	21.2	13.2	85	72.1	45.0	145	123.0	76.8	205	173.8	108.6	265	224.7	140.4
26	22.0	13.8	86	72.9	45.6	146	123.8	77.4	206	174.7	109.2	266	225.6	141.0
27	22.9	14.3	87	73.8	46.1	147	124.7	77.9	207	175.5	109.7	267	226.4	141.5
28	23.7	14.8	88	74.6	46.6	148	125.5	78.4	208	176.4	110.2	268	227.3	142.0
29	24.6	15.4	89	75.5	47.2	149	126.4	79.0	209	177.2	110.8	269	228.1	142.5
30	25.4	15.9	90	76.3	47.7	150	127.2	79.5	210	178.1	111.3	270	229.0	143.1
31	26.3	16.4	91	77.2	48.2	151	128.1	80.0	211	178.9	111.8	271	229.8	143.6
32	27.1	17.0	92	78.0	48.8	152	128.9	80.5	212	179.8	112.3	272	230.7	144.1
33	28.0	17.5	93	78.9	49.3	153	129.8	81.1	213	180.6	112.9	273	231.5	144.7
34	28.8	18.0	94	79.7	49.8	154	130.6	81.6	214	181.5	113.4	274	232.4	145.2
35	29.7	18.5	95	80.6	50.3	155	131.4	82.1	215	182.3	113.9	275	233.2	145.7
36	30.5	19.1	96	81.4	50.9	156	132.3	82.7	216	183.2	114.5	276	234.1	146.3
37	31.4	19.6	97	82.3	51.4	157	133.1	83.2	217	184.0	115.0	277	234.9	146.8
38	32.2	20.1	98	83.1	51.9	158	134.0	83.7	218	184.9	115.5	278	235.8	147.3
39	33.1	20.7	99	84.0	52.5	159	134.8	84.3	219	185.7	116.1	279	236.6	147.8
40	33.9	21.2	100	84.8	53.0	160	135.7	84.8	220	186.6	116.6	280	237.5	148.4
41	34.8	21.7	101	85.7	53.5	161	136.5	85.3	221	187.4	117.1	281	238.3	148.9
42	35.6	22.3	102	86.5	54.1	162	137.4	85.8	222	188.3	117.6	282	239.1	149.4
43	36.5	22.8	103	87.3	54.6	163	138.2	86.4	223	189.1	118.2	283	240.0	150.0
44	37.3	23.3	104	88.2	55.1	164	139.1	86.9	224	190.0	118.7	284	240.8	150.5
45	38.2	23.8	105	89.0	55.6	165	139.9	87.4	225	190.8	119.2	285	241.7	151.0
46	39.0	24.4	106	89.9	56.2	166	140.8	88.0	226	191.7	119.8	286	242.5	151.6
47	39.9	24.9	107	90.7	56.7	167	141.6	88.5	227	192.5	120.3	287	243.4	152.1
48	40.7	25.4	108	91.6	57.2	168	142.5	89.0	228	193.4	120.8	288	244.2	152.6
49	41.6	26.0	109	92.4	57.8	169	143.3	89.6	229	194.2	121.4	289	245.1	153.1
50	42.4	26.5	110	93.3	58.3	170	144.2	90.1	230	195.1	121.9	290	245.9	153.7
51	43.3	27.0	111	94.1	58.8	171	145.0	90.6	231	195.9	122.4	291	246.8	154.2
52	44.1	27.6	112	95.0	59.4	172	145.9	91.1	232	196.7	122.9	292	247.6	154.7
53	44.9	28.1	113	95.8	59.9	173	146.7	91.7	233	197.6	123.5	293	248.5	155.3
54	45.8	28.6	114	96.7	60.4	174	147.6	92.2	234	198.4	124.0	294	249.3	155.8
55	46.6	29.1	115	97.5	60.9	175	148.4	92.7	235	199.3	124.5	295	250.2	156.3
56	47.5	29.7	116	98.4	61.5	176	149.3	93.3	236	200.1	125.1	296	251.0	156.9
57	48.3	30.2	117	99.2	62.0	177	150.1	93.8	237	201.0	125.6	297	251.9	157.4
58	49.2	30.7	118	100.1	62.5	178	151.0	94.3	238	201.8	126.1	298	252.7	157.9
59	50.0	31.3	119	100.9	63.1	179	151.8	94.9	239	202.7	126.7	299	253.6	158.4
60	50.9	31.8	120	101.8	63.6	180	152.6	95.4	240	203.5	127.2	300	254.4	159.0
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 33 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.5	61	51.2	33.2	121	101.5	65.9	181	151.8	98.6	241	202.1	131.3
2	1.7	1.1	62	52.0	33.8	122	102.3	66.4	182	152.6	99.1	242	203.0	131.8
3	2.5	1.6	63	52.8	34.3	123	103.2	67.0	183	153.5	99.7	243	203.8	132.3
4	3.4	2.2	64	53.7	34.9	124	104.0	67.5	184	154.3	100.2	244	204.6	132.9
5	4.2	2.7	65	54.5	35.4	125	104.8	68.1	185	155.2	100.8	245	205.5	133.4
6	5.0	3.3	66	55.4	35.9	126	105.7	68.6	186	156.0	101.3	246	206.3	134.0
7	5.9	3.8	67	56.2	36.5	127	106.5	69.2	187	156.8	101.8	247	207.2	134.5
8	6.7	4.4	68	57.0	37.0	128	107.3	69.7	188	157.7	102.4	248	208.0	135.1
9	7.5	4.9	69	57.9	37.6	129	108.2	70.3	189	158.5	102.9	249	208.8	135.6
10	8.4	5.4	70	58.7	38.1	130	109.0	70.8	190	159.3	103.5	250	209.7	136.2
11	9.2	6.0	71	59.5	38.7	131	109.9	71.3	191	160.2	104.0	251	210.5	136.7
12	10.1	6.5	72	60.4	39.2	132	110.7	71.9	192	161.0	104.6	252	211.3	137.2
13	10.9	7.1	73	61.2	39.8	133	111.5	72.4	193	161.9	105.1	253	212.2	137.8
14	11.7	7.6	74	62.1	40.3	134	112.4	73.0	194	162.7	105.7	254	213.0	138.3
15	12.6	8.2	75	62.9	40.8	135	113.2	73.5	195	163.5	106.2	255	213.9	138.9
16	13.4	8.7	76	63.7	41.4	136	114.1	74.1	196	164.4	106.7	256	214.7	139.4
17	14.3	9.3	77	64.6	41.9	137	114.9	74.6	197	165.2	107.3	257	215.5	140.0
18	15.1	9.8	78	65.4	42.5	138	115.7	75.2	198	166.1	107.8	258	216.4	140.5
19	15.9	10.3	79	66.3	43.0	139	116.6	75.7	199	166.9	108.4	259	217.2	141.1
20	16.8	10.9	80	67.1	43.6	140	117.4	76.2	200	167.7	108.9	260	218.1	141.6
21	17.6	11.4	81	67.9	44.1	141	118.3	76.8	201	168.6	109.5	261	218.9	142.2
22	18.5	12.0	82	68.8	44.7	142	119.1	77.3	202	169.4	110.0	262	219.7	142.7
23	19.3	12.5	83	69.6	45.2	143	119.9	77.9	203	170.3	110.6	263	220.6	143.2
24	20.1	13.1	84	70.4	45.7	144	120.8	78.4	204	171.1	111.1	264	221.4	143.8
25	21.0	13.6	85	71.3	46.3	145	121.6	79.0	205	171.9	111.7	265	222.2	144.3
26	21.8	14.2	86	72.1	46.8	146	122.4	79.5	206	172.2	112.2	266	223.1	144.9
27	22.6	14.7	87	73.0	47.4	147	123.3	80.1	207	173.6	112.7	267	223.9	145.4
28	23.5	15.2	88	73.8	47.9	148	124.1	80.6	208	174.4	113.3	268	224.8	146.0
29	24.3	15.8	89	74.6	48.5	149	125.0	81.2	209	175.3	113.8	269	225.6	146.5
30	25.2	16.3	90	75.5	49.0	150	125.8	81.7	210	176.1	114.4	270	226.4	147.1
31	26.0	16.9	91	76.3	49.6	151	126.6	82.2	211	177.0	114.9	271	227.3	147.6
32	26.8	17.4	92	77.2	50.1	152	127.5	82.8	212	177.8	115.5	272	228.1	148.1
33	27.7	18.0	93	78.0	50.7	153	128.3	83.3	213	178.6	116.0	273	229.0	148.7
34	28.5	18.5	94	78.8	51.2	154	129.2	83.9	214	179.5	116.6	274	229.8	149.2
35	29.4	19.1	95	79.7	51.7	155	130.0	84.4	215	180.3	117.1	275	230.6	149.8
36	30.2	19.6	96	80.5	52.3	156	130.8	85.0	216	181.2	117.6	276	231.5	150.3
37	31.0	20.2	97	81.4	52.8	157	131.7	85.5	217	182.0	118.2	277	232.3	150.9
38	31.9	20.7	98	82.2	53.4	158	132.5	86.1	218	182.8	118.7	278	233.2	151.4
39	32.7	21.2	99	83.0	53.9	159	133.3	86.6	219	183.7	119.3	279	234.0	152.0
40	33.5	21.8	100	83.9	54.5	160	134.2	87.1	220	184.5	119.8	280	234.8	152.5
41	34.4	22.3	101	84.7	55.0	161	135.0	87.7	221	185.3	120.4	281	235.7	153.0
42	35.2	22.9	102	85.5	55.6	162	135.9	88.2	222	186.2	120.9	282	236.5	153.6
43	36.1	23.4	103	86.4	56.1	163	136.7	88.8	223	187.0	121.5	283	237.3	154.1
44	36.9	24.0	104	87.2	56.6	164	137.5	89.3	224	187.9	122.0	284	238.2	154.7
45	37.7	24.5	105	88.1	57.2	165	138.4	89.9	225	188.7	122.5	285	239.0	155.2
46	38.6	25.1	106	88.9	57.7	166	139.2	90.4	226	189.5	123.1	286	239.9	155.8
47	39.4	25.6	107	89.7	58.3	167	140.1	91.0	227	190.4	123.6	287	240.7	156.3
48	40.3	26.1	108	90.6	58.8	168	140.9	91.5	228	191.2	124.2	288	241.5	156.9
49	41.1	26.7	109	91.4	59.4	169	141.7	92.0	229	192.1	124.7	289	242.4	157.4
50	41.9	27.2	110	92.3	59.9	170	142.6	92.6	230	192.9	125.3	290	243.2	157.9
51	42.8	27.8	111	93.1	60.5	171	143.4	93.1	231	193.7	125.8	291	244.1	158.5
52	43.6	28.3	112	93.9	61.0	172	144.3	93.7	232	194.6	126.4	292	244.9	159.0
53	44.4	28.9	113	94.8	61.5	173	145.1	94.2	233	195.4	126.9	293	245.7	159.6
54	45.3	29.4	114	95.6	62.1	174	145.9	94.8	234	196.2	127.4	294	246.6	160.1
55	46.1	30.0	115	96.4	62.6	175	146.8	95.3	235	197.1	128.0	295	247.4	160.7
56	47.0	30.5	116	97.3	63.2	176	147.6	95.9	236	197.9	128.5	296	248.2	161.2
57	47.8	31.0	117	98.1	63.7	177	148.4	96.4	237	198.8	129.1	297	249.1	161.8
58	48.6	31.6	118	99.0	64.3	178	149.3	96.9	238	199.6	129.6	298	249.9	162.3
59	49.5	32.1	119	99.8	64.8	179	150.1	97.5	239	200.4	130.2	299	250.8	162.8
60	50.3	32.7	120	100.6	65.4	180	151.0	98.0	240	201.3	130.7	300	251.6	163.4
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 57 Degrees.

TABLE IX.   111

Difference of Latitude and Departure for 34 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	50.6	34.1	121	100.3	67.7	181	150.1	101.2	241	199.8	134.8
2	1.7	1.1	62	51.4	34.7	122	101.1	68.2	182	150.9	101.8	242	200.6	135.3
3	2.5	1.7	63	52.2	35.2	123	102.0	68.8	183	151.7	102.3	243	201.5	135.9
4	3.3	2.2	64	53.1	35.8	124	102.8	69.3	184	152.5	102.9	244	202.3	136.4
5	4.1	2.8	65	53.9	36.3	125	103.6	69.9	185	153.4	103.5	245	203.1	137.0
6	5.0	3.4	66	54.7	36.9	126	104.5	70.5	186	154.2	104.0	246	203.9	137.6
7	5.8	3.9	67	55.5	37.5	127	105.3	71.0	187	155.0	104.6	247	204.8	138.1
8	6.6	4.5	68	56.4	38.0	128	106.1	71.6	188	155.9	105.1	248	205.6	138.7
9	7.5	5.0	69	57.2	38.6	129	106.9	72.1	189	156.7	105.7	249	206.4	139.2
10	8.3	5.6	70	58.0	39.1	130	107.8	72.7	190	157.5	106.2	250	207.3	139.8
11	9.1	6.2	71	58.9	39.7	131	108.6	73.3	191	158.3	106.8	251	208.1	140.4
12	9.9	6.7	72	59.7	40.3	132	109.4	73.8	192	159.2	107.4	252	208.9	140.9
13	10.8	7.3	73	60.5	40.8	133	110.3	74.4	193	160.0	107.9	253	209.7	141.5
14	11.6	7.8	74	61.3	41.4	134	111.1	74.9	194	160.8	108.5	254	210.6	142.0
15	12.4	8.4	75	62.2	41.9	135	111.9	75.5	195	161.7	109.0	255	211.4	142.6
16	13.3	8.9	76	63.0	42.5	136	112.7	76.1	196	162.5	109.6	256	212.2	143.2
17	14.1	9.5	77	63.8	43.1	137	113.6	76.6	197	163.3	110.2	257	213.1	143.7
18	14.9	10.1	78	64.7	43.6	138	114.4	77.2	198	164.1	110.7	258	213.9	144.3
19	15.8	10.6	79	65.5	44.2	139	115.2	77.7	199	165.0	111.3	259	214.7	144.8
20	16.6	11.2	80	66.3	44.7	140	116.1	78.3	200	165.8	111.8	260	215.5	145.4
21	17.4	11.7	81	67.2	45.3	141	116.9	78.8	201	166.6	112.4	261	216.4	145.9
22	18.2	12.3	82	68.0	45.9	142	117.7	79.4	202	167.5	113.0	262	217.2	146.5
23	19.1	12.9	83	68.8	46.4	143	118.6	80.0	203	168.3	113.5	263	218.0	147.1
24	19.9	13.4	84	69.6	47.0	144	119.4	80.5	204	169.1	114.1	264	218.9	147.6
25	20.7	14.0	85	70.5	47.5	145	120.2	81.1	205	170.0	114.6	265	219.7	148.2
26	21.6	14.5	86	71.3	48.1	146	121.0	81.6	206	170.8	115.2	266	220.5	148.7
27	22.4	15.1	87	72.1	48.6	147	121.9	82.2	207	171.6	115.8	267	221.4	149.3
28	23.2	15.7	88	73.0	49.2	148	122.7	82.8	208	172.4	116.3	268	222.2	149.9
29	24.0	16.2	89	73.8	49.8	149	123.5	83.3	209	173.3	116.9	269	223.0	150.4
30	24.9	16.8	90	74.6	50.3	150	124.4	83.9	210	174.1	117.4	270	223.8	151.0
31	25.7	17.3	91	75.4	50.9	151	125.2	84.4	211	174.9	118.0	271	224.7	151.5
32	26.5	17.9	92	76.3	51.4	152	126.0	85.0	212	175.8	118.5	272	225.5	152.1
33	27.4	18.5	93	77.1	52.0	153	126.8	85.6	213	176.6	119.1	273	226.3	152.7
34	28.2	19.0	94	77.9	52.6	154	127.7	86.1	214	177.4	119.7	274	227.2	153.2
35	29.0	19.6	95	78.8	53.1	155	128.5	86.7	215	178.2	120.2	275	228.0	153.8
36	29.8	20.1	96	79.6	53.7	156	129.3	87.2	216	179.1	120.8	276	228.8	154.3
37	30.7	20.7	97	80.4	54.2	157	130.2	87.8	217	179.9	121.3	277	229.6	154.9
38	31.5	21.2	98	81.2	54.8	158	131.0	88.4	218	180.7	121.9	278	230.5	155.5
39	32.3	21.8	99	82.1	55.4	159	131.8	88.9	219	181.6	122.5	279	231.3	156.0
40	33.2	22.4	100	82.9	55.9	160	132.6	89.5	220	182.4	123.0	280	232.1	156.6
41	34.0	22.9	101	83.7	56.5	161	133.5	90.0	221	183.2	123.6	281	233.0	157.1
42	34.8	23.5	102	84.6	57.0	162	134.3	90.6	222	184.0	124.1	282	233.8	157.7
43	35.6	24.0	103	85.4	57.6	163	135.1	91.1	223	184.9	124.7	283	234.6	158.3
44	36.5	24.6	104	86.2	58.2	164	136.0	91.7	224	185.7	125.3	284	235.4	158.8
45	37.3	25.2	105	87.0	58.7	165	136.8	92.3	225	186.5	125.8	285	236.3	159.4
46	38.1	25.7	106	87.9	59.3	166	137.6	92.8	226	187.4	126.4	286	237.1	159.9
47	39.0	26.3	107	88.7	59.8	167	138.4	93.4	227	188.2	126.9	287	237.9	160.5
48	39.8	26.8	108	89.5	60.4	168	139.3	93.9	228	189.0	127.5	288	238.8	161.0
49	40.6	27.4	109	90.4	61.0	169	140.1	94.5	229	189.8	128.1	289	239.6	161.6
50	41.5	28.0	110	91.2	61.5	170	140.9	95.1	230	190.7	128.6	290	240.4	162.2
51	42.3	28.5	111	92.0	62.1	171	141.8	95.6	231	191.5	129.2	291	241.2	162.7
52	43.1	29.1	112	92.9	62.6	172	142.6	96.2	232	192.3	129.7	292	242.1	163.3
53	43.9	29.6	113	93.7	63.2	173	143.4	96.7	233	193.2	130.3	293	242.9	163.8
54	44.8	30.2	114	94.5	63.7	174	144.3	97.3	234	194.0	130.9	294	243.7	164.4
55	45.6	30.8	115	95.3	64.3	175	145.1	97.9	235	194.8	131.4	295	244.6	165.0
56	46.4	31.3	116	96.2	64.9	176	145.9	98.4	236	195.7	132.0	296	245.4	165.5
57	47.3	31.9	117	97.0	65.4	177	146.7	99.0	237	196.5	132.5	297	246.2	166.1
58	48.1	32.4	118	97.8	66.0	178	147.6	99.5	238	197.3	133.1	298	247.1	166.6
59	48.9	33.0	119	98.7	66.5	179	148.4	100.1	239	198.1	133.6	299	247.9	167.2
60	49.7	33.6	120	99.5	67.1	180	149.2	100.7	240	199.0	134.2	300	248.7	167.8
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 35 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	50.0	35.0	121	99.1	69.4	181	148.3	103.8	241	197.4	138.2
2	1.6	1.1	62	50.8	35.6	122	99.9	70.0	182	149.1	104.4	242	198.2	138.8
3	2.5	1.7	63	51.6	36.1	123	100.8	70.5	183	149.9	105.0	243	199.1	139.4
4	3.3	2.3	64	52.4	36.7	124	101.6	71.1	184	150.7	105.5	244	199.9	140.0
5	4.1	2.9	65	53.2	37.3	125	102.4	71.7	185	151.5	106.1	245	200.7	140.5
6	4.9	3.4	66	54.1	37.9	126	103.2	72.3	186	152.4	106.7	246	201.5	141.1
7	5.7	4.0	67	54.9	38.4	127	104.0	72.8	187	153.2	107.3	247	202.3	141.7
8	6.6	4.6	68	55.7	39.0	128	104.9	73.4	188	154.0	107.8	248	203.1	142.2
9	7.4	5.2	69	56.5	39.6	129	105.7	74.0	189	154.8	108.4	249	204.0	142.8
10	8.2	5.7	70	57.3	40.2	130	106.5	74.6	190	155.6	109.0	250	304.8	143.4
11	9.0	6.3	71	58.2	40.7	131	107.3	75.1	191	156.5	109.6	251	205.6	144.0
12	9.8	6.9	72	59.0	41.3	132	108.1	75.7	192	157.3	110.1	252	206.4	144.5
13	10.6	7.5	73	59.8	41.9	133	108.9	76.3	193	158.1	110.7	253	207.2	145.1
14	11.5	8.0	74	60.6	42.4	134	109.8	76.9	194	158.9	111.3	254	208.1	145.7
15	12.3	8.6	75	61.4	43.0	135	110.6	77.4	195	159.7	111.8	255	208.9	146.3
16	13.1	9.2	76	62.3	43.6	136	111.4	78.0	196	160.6	112.4	256	209.7	146.8
17	13.9	9.8	77	63.1	44.2	137	112.2	78.6	197	161.4	113.0	257	210.5	147.4
18	14.7	10.3	78	63.9	44.7	133	113.0	79.2	198	162.2	113.6	258	211.3	148.0
19	15.6	10.9	79	64.7	45.3	139	113.9	79.7	199	163.0	114.1	259	212.2	148.6
20	16.4	11.5	80	65.5	45.9	140	114.7	80.3	200	163.8	114.7	260	213.0	149.1
21	17.2	12.0	81	66.4	46.5	141	115.5	80.9	201	164.6	115.3	261	213.8	149.7
22	18.0	12.6	82	67.2	47.0	142	116.3	81.4	202	165.5	115.9	262	214.6	150.3
23	18.8	13.2	83	68.0	47.6	143	117.1	82.0	203	166.3	116.4	263	215.4	150.9
24	19.7	13.8	84	68.8	48.2	144	118.0	82.6	204	167.1	117.0	264	216.3	151.4
25	20.5	14.3	85	69.6	48.8	145	118.8	83.2	205	167.9	117.6	265	217.1	152.0
26	21.3	14.9	86	70.4	49.3	146	119.6	83.7	206	168.7	118.2	266	217.9	152.6
27	22.1	15.5	87	71.3	49.9	147	120.4	84.3	207	169.6	118.7	267	218.7	153.1
28	22.9	16.1	88	72.1	50.5	148	121.2	84.9	208	170.4	119.3	268	219.5	153.7
29	23.8	16.6	89	72.9	51.0	149	122.1	85.5	209	171.2	119.9	269	220.4	154.3
30	24.6	17.2	90	73.7	51.6	150	122.9	86.0	210	172.0	120.5	270	221.2	154.9
31	25.4	17.8	91	74.5	52.2	151	123.7	86.6	211	172.8	121.0	271	222.0	155.4
32	26.2	18.4	92	75.4	52.8	152	124.5	87.2	212	173.7	121.6	272	222.8	156.0
33	27.0	18.9	93	76.2	53.3	153	125.3	87.8	213	174.5	122.2	273	223.6	156.6
34	27.9	19.5	94	77.0	53.9	154	126.1	88.3	214	175.3	122.7	274	224.4	157.2
35	28.7	20.1	95	77.8	54.5	155	127.0	88.9	215	176.1	123.3	275	225.3	157.7
36	29.5	20.6	96	78.6	55.1	156	127.8	89.5	216	176.9	123.9	276	226.1	158.3
37	30.3	21.2	97	79.5	55.6	157	128.6	90.1	217	177.8	124.5	277	226.9	158.9
38	31.1	21.8	98	80.3	56.2	158	129.4	90.6	218	178.6	125.0	278	227.7	159.5
39	31.9	22.4	99	81.1	56.8	159	130.2	91.2	219	179.4	125.6	279	228.5	160.0
40	32.8	22.9	100	81.9	57.4	160	131.1	91.8	220	180.2	126.2	280	229.4	160.6
41	33.6	23.5	101	82.7	57.9	161	131.9	92.3	221	181.0	126.8	281	230.2	161.2
42	34.4	24.1	102	83.6	58.5	162	132.7	92.9	222	181.9	127.3	282	231.0	161.7
43	35.2	24.7	103	84.4	59.1	163	133.5	93.5	223	182.7	127.9	283	231.8	162.3
44	36.0	25.2	104	85.2	59.7	164	134.3	94.1	224	183.5	128.5	284	232.6	162.9
45	36.9	25.8	105	86.0	60.2	165	135.2	94.6	225	184.3	129.1	285	233.5	163.5
46	37.7	26.4	106	86.8	60.8	166	136.0	95.2	226	185.1	129.6	286	234.3	164.0
47	38.5	27.0	107	87.6	61.4	167	136.8	95.8	227	185.9	130.2	287	235.1	164.6
48	39.3	27.5	108	88.5	61.9	168	137.6	96.4	228	186.8	130.8	288	235.9	165.2
49	40.1	28.1	109	89.3	62.5	169	138.4	96.9	229	187.6	131.3	289	236.7	165.8
50	41.0	28.7	110	90.1	63.1	170	139.3	97.5	230	188.4	131.9	290	237.6	166.3
51	41.8	29.3	111	90.9	63.7	171	140.1	98.1	231	189.2	132.5	291	238.4	166.9
52	42.6	29.8	112	91.7	64.2	172	140.9	98.7	232	190.0	133.1	292	239.2	167.5
53	43.4	30.4	113	92.6	64.8	173	141.7	99.2	233	190.9	133.6	293	240.0	168.1
54	44.2	31.0	114	93.4	65.4	174	142.5	99.8	234	191.7	134.2	294	240.8	168.6
55	45.1	31.5	115	94.2	66.0	175	143.4	100.4	235	192.5	134.8	295	241.6	169.2
56	45.9	32.1	116	95.0	66.5	176	144.2	100.9	236	193.3	135.4	296	242.5	169.8
57	46.7	32.7	117	95.8	67.1	177	145.0	101.5	237	194.1	135.9	297	243.3	170.4
58	47.5	33.3	118	96.7	67.7	178	145.8	102.1	238	195.0	136.5	298	244.1	170.9
59	48.3	33.8	119	97.5	68.3	179	146.6	102.7	239	195.8	137.1	299	244.9	171.5
60	49.1	34.4	120	98.3	68.8	180	147.4	103.2	240	196.6	137.7	300	245.7	172.1
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX. 113

Difference of Latitude and Departure for 36 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	49.4	35.9	121	97.9	71.1	181	146.4	106.4	241	195.0	141.7
2	1.6	1.2	62	50.2	36.4	122	98.7	71.7	182	147.2	107.0	242	195.8	142.2
3	2.4	1.8	63	51.0	37.0	123	99.5	72.3	183	148.1	107.6	243	196.6	142.8
4	3.2	2.4	64	51.8	37.6	124	100.3	72.9	184	148.9	108.2	244	197.4	143.4
5	4.0	2.9	65	52.6	38.2	125	101.1	73.5	185	149.7	108.7	245	198.2	144.0
6	4.9	3.5	66	53.4	38.8	126	101.9	74.1	186	150.5	109.3	246	199.0	144.6
7	5.7	4.1	67	54.2	39.4	127	102.7	74.6	187	151.3	109.9	247	199.8	145.2
8	6.5	4.7	68	55.0	40.0	128	103.6	75.2	188	152.1	110.5	248	200.6	145.8
9	7.3	5.3	69	55.8	40.6	129	104.4	75.8	189	152.9	111.1	249	201.4	146.4
10	8.1	5.9	70	56.6	41.1	130	105.2	76.4	190	153.7	111.7	250	202.3	146.9
11	8.9	6.5	71	57.4	41.7	131	106.0	77.0	191	154.5	112.3	251	203.1	147.5
12	9.7	7.1	72	58.2	42.3	132	106.8	77.6	192	155.3	112.9	252	203.9	148.1
13	10.5	7.6	73	59.1	42.9	133	107.6	78.2	193	156.1	113.4	253	204.7	148.7
14	11.3	8.2	74	59.9	43.5	134	108.4	78.8	194	156.9	114.0	254	205.5	149.3
15	12.1	8.8	75	60.7	44.1	135	109.2	79.4	195	157.8	114.6	255	206.3	149.9
16	12.9	9.4	76	61.5	44.7	136	110.0	79.9	196	158.6	115.2	256	207.1	150.5
17	13.8	10.0	77	62.3	45.3	137	110.8	80.5	197	159.4	115.8	257	207.9	151.1
18	14.6	10.6	78	63.1	45.8	138	111.6	81.1	198	160.2	116.4	258	208.7	151.6
19	15.4	11.2	79	63.9	46.4	139	112.5	81.7	199	161.0	117.0	259	209.5	152.2
20	16.2	11.8	80	64.7	47.0	140	113.3	82.3	200	161.8	117.6	260	210.3	152.8
21	17.0	12.3	81	65.5	47.6	141	114.1	82.9	201	162.6	118.1	261	211.2	153.4
22	17.8	12.9	82	66.3	48.2	142	114.9	83.5	202	163.4	118.7	262	212.0	154.0
23	18.6	13.5	83	67.1	48.8	143	115.7	84.1	203	164.2	119.3	263	212.8	154.6
24	19.4	14.1	84	68.0	49.4	144	116.5	84.6	204	165.0	119.9	264	213.6	155.2
25	20.2	14.7	85	68.8	50.0	145	117.3	85.2	205	165.8	120.5	265	214.4	155.8
26	21.0	15.3	86	69.6	50.5	146	118.1	85.8	206	166.7	121.1	266	215.2	156.4
27	21.8	15.9	87	70.4	51.1	147	118.9	86.4	207	167.5	121.7	267	216.0	156.9
28	22.7	16.5	88	71.2	51.7	148	119.7	87.0	208	168.3	122.3	268	216.8	157.5
29	23.5	17.0	89	72.0	52.3	149	120.5	87.6	209	169.1	122.8	269	217.6	158.1
30	24.3	17.6	90	72.8	52.9	150	121.4	88.2	210	169.9	123.4	270	218.4	158.7
31	25.1	18.2	91	73.6	53.5	151	122.2	88.8	211	170.7	124.0	271	219.2	159.3
32	25.9	18.8	92	74.4	54.1	152	123.0	89.3	212	171.5	124.6	272	220.1	159.9
33	26.7	19.4	93	75.2	54.7	153	123.8	89.9	213	172.3	125.2	273	220.9	160.5
34	27.5	20.0	94	76.0	55.3	154	124.6	90.5	214	173.1	125.8	274	221.7	161.1
35	28.3	20.6	95	76.9	55.8	155	125.4	91.1	215	173.9	126.4	275	222.5	161.6
36	29.1	21.2	96	77.7	56.4	156	126.2	91.7	216	174.7	127.0	276	223.3	162.2
37	29.9	21.7	97	78.5	57.0	157	127.0	92.3	217	175.6	127.5	277	224.1	162.8
38	30.7	22.3	98	79.3	57.6	158	127.8	92.9	218	176.4	128.1	278	224.9	163.4
39	31.6	22.9	99	80.1	58.2	159	128.6	93.5	219	177.2	128.7	279	225.7	164.0
40	32.4	23.5	100	80.9	58.8	160	129.4	94.0	220	178.0	129.3	280	226.5	164.6
41	33.2	24.1	101	81.7	59.4	161	130.3	94.6	221	178.8	129.9	281	227.3	165.2
42	34.0	24.7	102	82.5	60.0	162	131.1	95.2	222	179.6	130.5	282	228.1	165.8
43	34.8	25.3	103	83.3	60.5	163	131.9	95.8	223	180.4	131.1	283	229.0	166.3
44	35.6	25.9	104	84.1	61.1	164	132.7	96.4	224	181.2	131.7	284	229.8	166.9
45	36.4	26.5	105	84.9	61.7	165	133.5	97.0	225	182.0	132.3	285	230.6	167.5
46	37.2	27.0	106	85.8	62.3	166	134.3	97.6	226	182.8	132.8	286	231.4	168.1
47	38.0	27.6	107	86.6	62.9	167	135.1	98.2	227	183.6	133.4	287	232.2	168.7
48	38.8	28.2	108	87.4	63.5	168	135.9	98.7	228	184.5	134.0	288	233.0	169.3
49	39.6	28.8	109	88.2	64.1	169	136.7	99.3	229	185.3	134.6	289	233.8	169.9
50	40.5	29.4	110	89.0	64.7	170	137.5	99.9	230	186.1	135.2	290	234.6	170.5
51	41.3	30.0	111	89.8	65.2	171	138.3	100.5	231	186.9	135.8	291	235.4	171.0
52	42.1	30.6	112	90.6	65.8	172	139.2	101.1	232	187.7	136.4	292	236.2	171.6
53	42.9	31.2	113	91.4	66.4	173	140.0	101.7	233	188.5	137.0	293	237.0	172.2
54	43.7	31.7	114	92.2	67.0	174	140.8	102.3	234	189.3	137.5	294	237.9	172.8
55	44.5	32.3	115	93.0	67.6	175	141.6	102.9	235	190.1	138.1	295	238.7	173.4
56	45.3	32.9	116	93.8	68.2	176	142.4	103.5	236	190.9	138.7	296	239.5	174.0
57	46.1	33.5	117	94.7	68.8	177	143.2	104.0	237	191.7	139.3	297	240.3	174.6
58	46.9	34.1	118	95.5	69.4	178	144.0	104.6	238	192.5	139.9	298	241.1	175.2
59	47.7	34.7	119	96.3	69.9	179	144.8	105.2	239	193.4	140.5	299	241.9	175.7
60	48.5	35.3	120	97.1	70.5	180	145.6	105.8	240	194.2	141.1	300	242.7	176.3
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 37 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	48.7	36.7	121	96.6	72.8	181	144.6	108.9	241	192.5	145.0
2	1.6	1.2	62	49.5	37.3	122	97.4	73.4	182	145.4	109.5	242	193.3	145.6
3	2.4	1.8	63	50.3	37.9	123	98.2	74.0	183	146.2	110.1	243	194.1	146.2
4	3.2	2.4	64	51.1	38.5	124	99.0	74.6	184	146.9	110.7	244	194.9	146.8
5	4.0	3.0	65	51.9	39.1	125	99.8	75.2	185	147.7	111.3	245	195.7	147.4
6	4.8	3.6	66	52.7	39.7	126	100.6	75.8	186	148.5	111.9	246	196.5	148.0
7	5.6	4.2	67	53.5	40.3	127	101.4	76.4	187	149.3	112.5	247	197.3	148.6
8	6.4	4.8	68	54.3	40.9	128	102.2	77.0	188	150.1	113.1	248	198.1	149.3
9	7.2	5.4	69	55.1	41.5	129	103.0	77.6	189	150.9	113.7	249	198.9	149.9
10	8.0	6.0	70	55.9	42.1	130	103.8	78.2	190	151.7	114.3	250	199.7	150.5
11	8.8	6.6	71	56.7	42.7	131	104.6	78.8	191	152.5	114.9	251	200.5	151.1
12	9.6	7.2	72	57.5	43.3	132	105.4	79.4	192	153.3	115.5	252	201.3	151.7
13	10.4	7.8	73	58.3	43.9	133	106.2	80.0	193	154.1	116.2	253	202.1	152.3
14	11.2	8.4	74	59.1	44.5	134	107.0	80.6	194	154.9	116.8	254	202.9	152.9
15	12.0	9.0	75	59.9	45.1	135	107.8	81.2	195	155.7	117.4	255	203.7	153.5
16	12.8	9.6	76	60.7	45.7	136	108.6	81.8	196	156.5	118.0	256	204.5	154.1
17	13.6	10.2	77	61.5	46.3	137	109.4	82.4	197	157.3	118.6	257	205.2	154.7
18	14.4	10.8	78	62.3	46.9	138	110.2	83.1	198	158.1	119.2	258	206.0	155.3
19	15.2	11.4	79	63.1	47.5	139	111.0	83.7	199	158.9	119.8	259	206.8	155.9
20	16.0	12.0	80	63.9	48.1	140	111.8	84.3	200	159.7	120.4	260	207.6	156.5
21	16.8	12.6	81	64.7	48.7	141	112.6	84.9	201	160.5	121.0	261	208.4	157.1
22	17.6	13.2	82	65.5	49.3	142	113.4	85.5	202	161.3	121.6	262	209.2	157.7
23	18.4	13.8	83	66.3	50.0	143	114.2	86.1	203	162.1	122.2	263	210.0	158.3
24	19.2	14.4	84	67.1	50.6	144	115.0	86.7	204	162.9	122.8	264	210.8	158.9
25	20.0	15.0	85	67.9	51.2	145	115.8	87.3	205	163.7	123.4	265	211.6	159.5
26	20.8	15.6	86	68.7	51.8	146	116.6	87.9	206	164.5	124.0	266	212.4	160.1
27	21.6	16.2	87	69.5	52.4	147	117.4	88.5	207	165.3	124.6	267	213.2	160.7
28	22.4	16.9	88	70.3	53.0	148	118.2	89.1	208	166.1	125.2	268	214.0	161.3
29	23.2	17.5	89	71.1	53.6	149	119.0	89.7	209	166.9	125.8	269	214.8	161.9
30	24.0	18.1	90	71.9	54.2	150	119.8	90.3	210	167.7	126.4	270	215.6	162.5
31	24.8	18.7	91	72.7	54.8	151	120.6	90.9	211	168.5	127.0	271	216.4	163.1
32	25.6	19.3	92	73.5	55.4	152	121.4	91.5	212	169.3	127.6	272	217.2	163.7
33	26.4	19.9	93	74.3	56.0	153	122.2	92.1	213	170.1	128.2	273	218.0	164.3
34	27.2	20.5	94	75.1	56.6	154	123.0	92.7	214	170.9	128.8	274	218.8	164.9
35	28.0	21.1	95	75.9	57.2	155	123.8	93.3	215	171.7	129.4	275	219.6	165.5
36	28.8	21.7	96	76.7	57.8	156	124.6	93.9	216	172.5	130.0	276	220.4	166.1
37	29.5	22.3	97	77.5	58.4	157	125.4	94.5	217	173.3	130.6	277	221.2	166.7
38	30.3	22.9	98	78.3	59.0	158	126.2	95.1	218	174.1	131.2	278	222.0	167.3
39	31.1	23.5	99	79.1	59.6	159	127.0	95.7	219	174.9	131.8	279	222.8	167.9
40	31.9	24.1	100	79.9	60.2	160	127.8	96.3	220	175.7	132.4	280	223.6	168.5
41	32.7	24.7	101	80.7	60.8	161	128.6	96.9	221	176.5	133.0	281	224.4	169.1
42	33.5	25.3	102	81.5	61.4	162	129.4	97.5	222	177.3	133.6	282	225.2	169.7
43	34.3	25.9	103	82.3	62.0	163	130.2	98.1	223	178.1	134.2	283	226.0	170.3
44	35.1	26.5	104	83.1	62.6	164	131.0	98.7	224	178.9	134.8	284	226.8	170.9
45	35.9	27.1	105	83.9	63.2	165	131.8	99.3	225	179.7	135.4	285	227.6	171.5
46	36.7	27.7	106	84.7	63.8	166	132.6	99.9	226	180.5	136.0	286	228.4	172.1
47	37.5	28.3	107	85.5	64.4	167	133.4	100.5	227	181.3	136.6	287	229.2	172.7
48	38.3	28.9	108	86.3	65.0	168	134.2	101.1	228	182.1	137.2	288	230.0	173.3
49	39.1	29.5	109	87.1	65.6	169	135.0	101.7	229	182.9	137.8	289	230.8	173.9
50	39.9	30.1	110	87.8	66.2	170	135.8	102.3	230	183.7	138.4	290	231.6	174.5
51	40.7	30.7	111	88.6	66.8	171	136.6	102.9	231	184.5	139.0	291	232.4	175.1
52	41.5	31.3	112	89.4	67.4	172	137.4	103.5	232	185.3	139.6	292	233.2	175.7
53	42.3	31.9	113	90.2	68.0	173	138.2	104.1	233	186.1	140.2	293	234.0	176.3
54	43.1	32.5	114	91.0	68.6	174	139.0	104.7	234	186.9	140.8	294	234.8	176.9
55	43.9	33.1	115	91.8	69.2	175	139.8	105.3	235	187.7	141.4	295	235.6	177.5
56	44.7	33.7	116	92.6	69.8	176	140.6	105.9	236	188.5	142.0	296	236.4	178.1
57	45.5	34.3	117	93.4	70.4	177	141.4	106.5	237	189.3	142.6	297	237.2	178.7
58	46.3	34.9	118	94.2	71.0	178	142.2	107.1	238	190.1	143.2	298	238.0	179.3
59	47.1	35.5	119	95.0	71.6	179	143.0	107.7	239	190.9	143.8	299	238.8	179.9
60	47.9	36.1	120	95.8	72.2	180	143.8	108.3	240	191.7	144.4	300	239.6	180.5
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 53 Degrees.

TABLE IX.

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Difference of Latitude and Departure for 38 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	48.1	37.6	121	95.3	74.5	181	142.6	111.4	241	189.9	148.4
2	1.6	1.2	62	48.9	38.2	122	96.1	75.1	182	143.4	112.1	242	190.7	149.0
3	2.4	1.8	63	49.6	38.8	123	96.9	75.7	183	144.2	112.7	243	191.5	149.6
4	3.2	2.5	64	50.4	39.4	124	97.7	76.3	184	145.0	113.3	244	192.3	150.2
5	3.9	3.1	65	51.2	40.0	125	98.5	77.0	185	145.8	113.9	245	193.1	150.8
6	4.7	3.7	66	52.0	40.6	126	99.3	77.6	186	146.6	114.5	246	193.9	151.5
7	5.5	4.3	67	52.8	41.2	127	100.1	78.2	187	147.4	115.1	247	194.6	152.1
8	6.3	4.9	68	53.6	41.9	128	100.9	78.8	188	148.1	115.7	248	195.4	152.7
9	7.1	5.5	69	54.4	42.5	129	101.7	79.4	189	148.9	116.4	249	196.2	153.3
10	7.9	6.2	70	55.2	43.1	130	102.4	80.0	190	149.7	117.0	250	197.0	153.9
11	8.7	6.8	71	55.9	43.7	131	103.2	80.7	191	150.5	117.6	251	197.8	154.5
12	9.5	7.4	72	56.7	44.3	132	104.0	81.3	192	151.3	118.2	252	198.6	155.1
13	10.2	8.0	73	57.5	44.9	133	104.8	81.9	193	152.1	118.8	253	199.4	155.8
14	11.0	8.6	74	58.3	45.6	134	105.6	82.5	194	152.9	119.4	254	200.2	156.4
15	11.8	9.2	75	59.1	46.2	135	106.4	83.1	195	153.7	120.1	255	200.9	157.0
16	12.6	9.9	76	59.9	46.8	136	107.2	83.7	196	154.5	120.7	256	201.7	157.6
17	13.4	10.5	77	60.7	47.4	137	108.0	84.3	197	155.2	121.3	257	202.5	158.2
18	14.2	11.1	78	61.5	48.0	138	108.7	85.0	198	156.0	121.9	258	203.3	158.8
19	15.0	11.7	79	62.3	48.6	139	109.5	85.6	199	156.8	122.5	259	204.1	159.5
20	15.8	12.3	80	63.0	49.3	140	110.3	86.2	200	157.6	123.1	260	204.9	160.1
21	16.5	12.9	81	63.8	49.9	141	111.1	86.8	201	158.4	123.7	261	205.7	160.7
22	17.3	13.5	82	64.6	50.5	142	111.9	87.4	202	159.2	124.4	262	206.5	161.3
23	18.1	14.2	83	65.4	51.1	143	112.7	88.0	203	160.0	125.0	263	207.2	161.9
24	18.9	14.8	84	66.2	51.7	144	113.5	88.7	204	160.8	125.6	264	208.0	162.5
25	19.7	15.4	85	67.0	52.3	145	114.3	89.3	205	161.5	126.2	265	208.8	163.2
26	20.5	16.0	86	67.8	52.9	146	115.0	89.9	206	162.3	126.8	266	209.6	163.8
27	21.3	16.6	87	68.6	53.6	147	115.8	90.5	207	163.1	127.4	267	210.4	164.4
28	22.1	17.2	88	69.3	54.2	148	116.6	91.1	208	163.9	128.1	268	211.2	165.0
29	22.9	17.9	89	70.1	54.8	149	117.4	91.7	209	164.7	128.7	269	212.0	165.6
30	23.6	18.5	90	70.9	55.4	150	118.2	92.3	210	165.5	129.3	270	212.8	166.2
31	24.4	19.1	91	71.7	56.0	151	119.0	93.0	211	166.3	129.9	271	213.6	166.8
32	25.2	19.7	92	72.5	56.6	152	119.8	93.6	212	167.1	130.5	272	214.3	167.5
33	26.0	20.3	93	73.3	57.3	153	120.6	94.2	213	167.8	131.1	273	215.1	168.1
34	26.8	20.9	94	74.1	57.9	154	121.4	94.8	214	168.6	131.8	274	215.9	168.7
35	27.6	21.5	95	74.9	58.5	155	122.1	95.4	215	169.4	132.4	275	216.7	169.3
36	28.4	22.2	96	75.6	59.1	156	122.9	96.0	216	170.2	133.0	276	217.5	169.9
37	29.2	22.8	97	76.4	59.7	157	123.7	96.7	217	171.0	133.6	277	218.3	170.5
38	29.9	23.4	98	77.2	60.3	158	124.5	97.3	218	171.8	134.2	278	219.1	171.2
39	30.7	24.0	99	78.0	61.0	159	125.3	97.9	219	172.6	134.8	279	219.9	171.8
40	31.5	24.6	100	78.8	61.6	160	126.1	98.5	220	173.4	135.4	280	220.6	172.4
41	32.3	25.2	101	79.6	62.2	161	126.9	99.1	221	174.2	136.1	281	221.4	173.0
42	33.1	25.9	102	80.4	62.8	162	127.7	99.7	222	174.9	136.7	282	222.2	173.6
43	33.9	26.5	103	81.2	63.4	163	128.4	100.4	223	175.7	137.3	283	223.0	174.2
44	34.7	27.1	104	82.0	64.0	164	129.2	101.0	224	176.5	137.9	284	223.8	174.8
45	35.5	27.7	105	82.7	64.6	165	130.0	101.6	225	177.3	138.5	285	224.6	175.5
46	36.2	28.3	106	83.5	65.3	166	130.8	102.2	226	178.1	139.1	286	225.4	176.1
47	37.0	28.9	107	84.3	65.9	167	131.6	102.8	227	178.9	139.8	287	226.2	176.7
48	37.8	29.6	108	85.1	66.5	168	132.4	103.4	228	179.7	140.4	288	226.9	177.3
49	38.6	30.2	109	85.9	67.1	169	133.2	104.0	229	180.5	141.0	289	227.7	177.9
50	39.4	30.8	110	86.7	67.7	170	134.0	104.7	230	181.2	141.6	290	228.5	178.5
51	40.2	31.4	111	87.5	68.3	171	134.7	105.3	231	182.0	142.2	291	229.3	179.2
52	41.0	32.0	112	88.3	69.0	172	135.5	105.9	232	182.8	142.8	292	230.1	179.8
53	41.8	32.6	113	89.0	69.6	173	136.3	106.5	233	183.6	143.4	293	230.9	180.4
54	42.6	33.2	114	89.8	70.2	174	137.1	107.1	234	184.4	144.1	294	231.7	181.0
55	43.3	33.9	115	90.6	70.8	175	137.9	107.7	235	185.2	144.7	295	232.5	181.6
56	44.1	34.5	116	91.4	71.4	176	138.7	108.4	236	186.0	145.3	296	233.3	182.2
57	44.9	35.1	117	92.2	72.0	177	139.5	109.0	237	186.8	145.9	297	234.0	182.9
58	45.7	35.7	118	93.0	72.6	178	140.3	109.6	238	187.5	146.5	298	234.8	183.5
59	46.5	36.3	119	93.8	73.3	179	141.1	110.2	239	188.3	147.1	299	235.6	184.1
60	47.3	36.9	120	94.6	73.9	180	141.8	110.8	240	189.1	147.8	300	236.4	184.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 39 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	47.4	38.4	121	94.0	76.1	181	140.7	113.9	241	187.3	151.7
2	1.6	1.3	62	48.2	39.0	122	94.8	76.8	182	141.4	114.5	242	188.1	152.3
3	2.3	1.9	63	49.0	39.6	123	95.6	77.4	183	142.2	115.2	243	188.8	152.9
4	3.1	2.5	64	49.7	40.3	124	96.4	78.0	184	143.0	115.8	244	189.6	153.6
5	3.9	3.1	65	50.5	40.9	125	97.1	78.7	185	143.8	116.4	245	·190.4	154.2
6	4.7	3.8	66	51.3	41.5	126	97.9	79.3	186	144.5	117.1	246	191.2	154.8
7	5.4	4.4	67	52.1	42.2	127	98.7	79.9	187	145.3	117.7	247	192.0	155.4
8	6.2	5.0	68	52.8	42.8	128	99.5	80.6	188	146.1	118.3	248	192.7	156.1
9	7.0	5.7	69	53.6	43.4	129	100.3	81.2	189	146.9	118.9	249	193.5	156.7
10	7.8	6.3	70	54.4	44.1	130	101.0	81.8	190	147.7	119.6	250	194.3	157.3
11	8.5	6.9	71	55.2	44.7	131	101.8	82.4	191	148.4	120.2	251	195.1	158.0
12	9.3	7.6	72	56.0	45.3	132	102.6	83.1	192	149.2	120.8	252	195.8	158.6
13	10.1	8.2	73	56.7	45.9	133	103.4	83.7	193	150.0	121.5	253	196.6	159.2
14	10.9	8.8	74	57.5	46.6	134	104.1	84.3	194	150.8	122.1	254	197.4	159.8
15	11.7	9.4	75	58.3	47.2	135	104.9	85.0	195	151.5	122.7	255	198.2	160.5
16	12.4	10.1	76	59.1	47.8	136	105.7	85.6	196	152.3	123.3	256	198.9	161.1
17	13.2	10.7	77	59.8	48.5	137	106.5	86.2	197	153.1	124.0	257	199.7	161.7
18	14.0	11.8	78	60.6	49.1	138	107.2	86.8	198	153.9	194.6	258	200.5	162.4
19	14.8	12.0	79	61.4	49.7	139	108.0	87.5	199	154.7	125.2	259	201.3	163.0
20	15.5	12.6	80	62.2	50.3	140	108.8	88.1	200	155.4	125.9	260	202.1	163.6
21	16.3	13.2	81	62.9	51.0	141	109.6	88.7	201	156.2	126.5	261	202.8	164.3
22	17.1	13.8	82	63.7	51.6	142	110.4	89.4	202	157.0	127.1	262	203.6	164.9
23	17.9	14.5	83	64.5	52.2	143	111.1	90.0	203	157.8	127.8	263	204.4	165.5
24	18.7	15.1	84	65.3	52.9	144	111.9	90.6	204	158.5	128.4	264	205.2	166.1
25	19.4	15.7	85	66.1	53.5	145	112.7	91.3	205	159.3	129.0	265	205.9	166.8
26	20.2	16.4	86	66.8	54.1	146	113.5	91.9	206	160.1	129.6	266	206.7	167.4
27	21.0	17.0	87	67.6	54.8	147	114.2	92.5	207	160.9	130.3	267	207.5	168.0
28	21.8	17.6	88	68.4	55.4	148	115.0	93.1	208	161.6	130.9	268	208.3	168.7
29	22.5	18.3	89	69.2	56.0	149	115.8	93.8	209	162.4	131.5	269	209.1	169.3
30	23.3	18.9	90	69.9	56.6	150	116.6	94.4	210	163.2	132.2	270	209.8	169.9
31	24.1	19.5	91	70.7	57.3	151	117.3	95.0	211	164.0	132.8	271	210.6	170.5
32	24.9	20.1	92	71.5	57.9	152	118.1	95.7	212	164.8	133.4	272	211.4	171.2
33	25.6	20.8	93	72.3	58.5	153	118.9	96.3	213	165.5	134.0	273	212.2	171.8
34	26.4	21.4	94	73.1	59.2	154	119.7	96.9	214	166.3	134.7	274	212.9	172.4
35	27.2	22.0	95	73.8	59.8	155	120.5	97.5	215	167.1	135.3	275	213.7	173.1
36	28.0	22.7	96	74.6	60.4	156	121.2	98.2	216	167.9	135.9	276	214.5	173.7
37	28.8	23.3	97	75.4	61.0	157	122.0	98.8	217	168.6	136.6	277	215.3	174.3
38	29.5	23.9	98	76.2	61.7	158	122.8	99.4	218	169.4	137.2	278	216.0	175.0
39	30.3	24.5	99	76.9	62.3	159	123.6	100.1	219	170.2	137.8	279	216.8	175.6
40	31.1	25.2	100	77.7	62.9	160	124.3	100.7	220	171.0	138.5	280	217.6	176.2
41	31.9	25.8	101	78.5	63.6	161	125.1	101.3	221	171.7	139.1	281	218.4	176.8
42	32.6	26.4	102	79.3	64.2	162	125.9	101.9	222	172.5	139.7	282	219.2	177.5
43	33.4	.27.1	103	80.0	64.8	163	126.7	102.6	223	173.3	140.3	283	219.9	178.1
44	34.2	27.7	104	80.8	65.4	164	127.5	103.2	224	174.1	141.0	284	220.7	178.7
45	35.0	28.3	105	81.6	66.1	165	128.2	103.8	225	174.9	141.6	285	221.5	179.4
46	35.7	28.9	106	82.4	66.7	166	129.0	104.5	226	175.6	142.2	286	222.3	180.0
47	36.5	29.6	107	83.2	67.3	167	129.8	105.1	227	176.4	142.9	287	223.0	180.6
48	37.3	30.2	108	83.9	68.0	168	130.6	105.7	228	177.2	143.5	288	223.8	181.2
49	38.1	30.8	109	84.7	68.6	169	131.3	106.4	229	178.0	144.1	289	224.6	181.9
50	38.9	31.5	110	85.5	69.2	170	132.1	107.0	230	178.7	144.7	290	225.4	182.5
51	39.6	32.1	111	86.3	69.9	171	132.9	107.6	231	179.5	145.4	291	226.1	183.1
52	40.4	32.7	112	87.0	70.5	172	133.7	108.2	232	180.3	146.0	292	226.9	183.8
53	41.2	33.4	113	87.8	71.1	173	134.4	108.9	233	181.1	146.6	293	227.7	184.4
54	42.0	34.0	114	88.6	71.7	174	135.2	109.5	234	181.9	147.3	294	228.5	185.0
55	42.7	34.6	115	89.4	72.4	175	136.0	110.1	235	182.6	147.9	295	229.3	185.6
56	43.5	35.2	116	90.1	73.0	176	136.8	110.8	236	183.4	148.5	296	230.0	186.3
57	44.3	35.9	117	90.9	73.6	177	137.6	111.4	237	184.2	149.1	297	230.8	186.9
58	45.1	36.5	118	91.7	74.3	178	138.3	112.0	238	185.0	149.8	298	231.6	187.5
59	45.9	37.1	119	92.5	74.9	179	139.1	112.6	239	185.7	150.4	299	232.4	188.2
60	46.6	37.8	120	93.3	75.5	180	139.9	113.3	240	186.5	151.0	300	233.1	188.8
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

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Difference of Latitude and Departure for 40 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.6	61	46.7	39.2	121	92.7	77.8	181	138.7	116.3	241	184.6	154.9
2	1.5	1.3	62	47.5	39.9	122	93.5	78.4	182	139.4	117.0	242	185.4	155.6
3	2.3	1.9	63	48.3	40.5	123	94.2	79.1	183	140.2	117.6	243	186.1	156.2
4	3.1	2.6	64	49.0	41.1	124	95.0	79.7	184	141.0	118.3	244	186.9	156.8
5	3.8	3.2	65	49.8	41.8	125	95.8	80.3	185	141.7	118.9	245	187.7	157.5
6	4.6	3.9	66	50.6	42.4	126	96.5	81.0	186	142.5	119.6	246	188.4	158.1
7	5.4	4.5	67	51.3	43.1	127	97.3	81.6	187	143.3	120.2	247	189.2	158.8
8	6.1	5.1	68	52.1	43.7	128	98.1	82.3	188	144.0	120.8	248	190.0	159.4
9	6.9	5.8	69	52.9	44.4	129	98.8	82.9	189	144.8	121.5	249	190.7	160.1
10	7.7	6.4	70	53.6	45.0	130	99.6	83.6	190	145.5	122.1	250	191.5	160.7
11	8.4	7.1	71	54.4	45.6	131	100.4	84.2	191	146.3	122.8	251	192.3	161.3
12	9.2	7.7	72	55.2	46.3	132	101.1	84.8	192	147.1	123.4	252	193.0	162.0
13	10.0	8.4	73	55.9	46.9	133	101.9	85.5	193	147.8	124.1	253	193.8	162.6
14	10.7	9.0	74	56.7	47.6	134	102.6	86.1	194	148.6	124.7	254	194.6	163.3
15	11.5	9.6	75	57.5	48.2	135	103.4	86.8	195	149.4	125.3	255	195.3	163.9
16	12.3	10.3	76	58.2	48.9	136	104.2	87.4	196	150.1	126.0	256	196.1	164.6
17	13.0	10.9	77	59.0	49.5	137	104.9	88.1	197	150.9	126.6	257	196.9	165.2
18	13.8	11.6	78	59.8	50.1	138	105.7	88.7	198	151.7	127.3	258	197.6	165.8
19	14.6	12.2	79	60.5	50.8	139	106.5	89.3	199	152.4	127.9	259	198.4	166.5
20	15.3	12.9	80	61.3	51.4	140	107.2	90.0	200	153.2	128.6	260	199.2	167.1
21	16.1	13.5	81	62.0	52.1	141	108.0	90.6	201	154.0	129.2	261	199.9	167.8
22	16.9	14.1	82	62.8	52.7	142	108.8	91.3	202	154.7	129.8	262	200.7	168.4
23	17.6	14.8	83	63.6	53.4	143	109.5	91.9	203	155.5	130.5	263	201.5	169.1
24	18.4	15.4	84	64.3	54.0	144	110.3	92.6	204	156.3	131.1	264	202.2	169.7
25	19.2	16.1	85	65.1	54.6	145	111.1	93.2	205	157.0	131.8	265	203.0	170.3
26	19.9	16.7	86	65.9	55.3	146	111.8	93.8	206	157.8	132.4	266	203.8	171.0
27	20.7	17.4	87	66.6	55.9	147	112.6	94.5	207	158.6	133.1	267	204.5	171.6
28	21.4	18.0	88	67.4	56.6	148	113.4	95.1	208	159.3	133.7	268	205.3	172.3
29	22.2	18.6	89	68.2	57.2	149	114.1	95.8	209	160.1	134.3	269	206.1	172.9
30	23.0	19.3	90	68.9	57.9	150	114.9	96.4	210	160.9	135.0	270	206.8	173.6
31	23.7	19.9	91	69.7	58.5	151	115.7	97.1	211	161.6	135.6	271	207.6	174.2
32	24.5	20.6	92	70.5	59.1	152	116.4	97.7	212	162.4	136.3	272	208.4	174.8
33	25.3	21.2	93	71.2	59.8	153	117.2	98.3	213	163.2	136.9	273	209.1	175.5
34	26.0	21.9	94	72.0	60.4	154	118.0	99.0	214	163.9	137.6	274	209.9	176.1
35	26.8	22.5	95	72.8	61.1	155	118.7	99.6	215	164.7	138.2	275	210.7	176.8
36	27.6	23.1	96	73.5	61.7	156	119.5	100.3	216	165.5	138.8	276	211.4	177.4
37	28.3	23.8	97	74.3	62.4	157	120.3	100.9	217	166.2	139.5	277	212.2	178.1
38	29.1	24.4	98	75.1	63.0	158	121.0	101.6	218	167.0	140.1	278	213.0	178.7
39	29.9	25.1	99	75.8	63.6	159	121.8	102.2	219	167.8	140.8	279	213.7	179.3
40	30.6	25.7	100	76.6	64.3	160	122.6	102.8	220	168.5	141.4	280	214.5	180.0
41	31.4	26.4	101	77.4	64.9	161	123.3	103.5	221	169.3	142.1	281	215.3	180.6
42	32.2	27.0	102	78.1	65.6	162	124.1	104.1	222	170.1	142.7	282	216.0	181.3
43	32.9	27.6	103	78.9	66.2	163	124.9	104.8	223	170.8	143.3	283	216.8	181.9
44	33.7	28.3	104	79.7	66.8	164	125.6	105.4	224	171.6	144.0	284	217.6	182.6
45	34.5	28.9	105	80.4	67.5	165	126.4	106.1	225	172.4	144.6	285	218.3	183.2
46	35.2	29.6	106	81.2	68.1	166	127.2	106.7	226	173.1	145.3	286	219.1	183.8
47	36.0	30.2	107	82.0	68.8	167	127.9	107.3	227	173.9	145.9	287	219.9	184.5
48	36.8	30.9	108	82.7	69.4	168	128.7	108.0	228	174.7	146.6	288	220.6	185.1
49	37.5	31.5	109	83.5	70.1	169	129.5	108.6	229	175.4	147.2	289	221.4	185.8
50	38.3	32.1	110	84.3	70.7	170	130.2	109.3	230	176.2	147.8	290	222.2	186.4
51	39.1	32.8	111	85.0	71.3	171	131.0	109.9	231	177.0	148.5	291	222.9	187.1
52	39.8	33.4	112	85.8	72.0	172	131.8	110.6	232	177.7	149.1	292	223.7	187.7
53	40.6	34.1	113	86.6	72.6	173	132.5	111.2	233	178.5	149.8	293	224.5	188.3
54	41.4	34.7	114	87.3	73.3	174	133.3	111.8	234	179.3	150.4	294	225.2	189.0
55	42.1	35.4	115	88.1	73.9	175	134.1	112.5	235	180.0	151.1	295	226.0	189.6
56	42.9	36.0	116	88.9	74.6	176	134.8	113.1	236	180.8	151.7	296	226.7	190.3
57	43.7	36.6	117	89.6	75.2	177	135.6	113.8	237	181.6	152.3	297	227.5	190.9
58	44.4	37.3	118	90.4	75.8	178	136.4	114.4	238	182.3	153.0	298	228.3	191.6
59	45.2	37.9	119	91.2	76.5	179	137.1	115.1	239	183.1	153.6	299	229.0	192.2
60	46.0	38.6	120	91.9	77.1	180	137.9	115.7	240	183.9	154.3	300	229.8	192.8
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

Difference of Latitude and Departure for 41 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.8	0.7	61	46.0	40.0	121	91.3	79.4	181	136.6	118.7	241	181.9	158.1
2	1.5	1.3	62	46.8	40.7	122	92.1	80.0	182	137.4	119.4	242	182.6	158.8
3	2.3	2.0	63	47.5	41.3	123	92.8	80.7	183	138.1	120.1	243	183.4	159.4
4	3.0	2.6	64	48.3	42.0	124	93.6	81.4	184	138.9	120.7	244	184.1	160.1
5	3.8	3.3	65	49.1	42.6	125	94.3	82.0	185	139.6	121.4	245	184.9	160.7
6	4.5	3.9	66	49.8	43.3	126	95.1	82.7	186	140.4	122.0	246	185.7	161.4
7	5.3	4.6	67	50.6	44.0	127	95.8	83.3	187	141.1	122.7	247	186.4	162.0
8	6.0	5.2	68	51.3	44.6	128	96.6	84.0	188	141.9	123.3	248	187.2	162.7
9	6.8	5.9	69	52.1	45.3	129	97.4	84.6	189	142.6	124.0	249	187.9	163.4
10	7.5	6.6	70	52.8	45.9	130	98.1	85.3	190	143.4	124.7	250	188.7	164.0
11	8.3	7.2	71	53.6	46.6	131	98.9	85.9	191	144.1	125.3	251	189.4	164.7
12	9.1	7.9	72	54.3	47.2	132	99.6	86.6	192	144.9	126.0	252	190.2	165.3
13	9.8	8.5	73	55.1	47.9	133	100.4	87.3	193	145.7	126.6	253	190.9	166.0
14	10.6	9.2	74	55.8	48.5	134	101.1	87.9	194	146.4	127.3	254	191.7	166.6
15	11.3	9.8	75	56.6	49.2	135	101.9	88.6	195	147.2	127.9	255	192.5	167.3
16	12.1	10.5	76	57.4	49.9	136	102.6	89.2	196	147.9	128.6	256	193.2	168.0
17	12.8	11.2	77	58.1	50.5	137	103.4	89.9	197	148.7	129.2	257	194.0	168.6
18	13.6	11.8	78	58.9	51.2	138	104.1	90.5	198	149.4	129.9	258	194.7	169.3
19	14.3	12.5	79	59.6	51.8	139	104.9	91.2	199	150.2	130.6	259	195.5	169.9
20	15.1	13.1	80	60.4	52.5	140	105.7	91.8	200	150.9	131.2	260	196.2	170.6
21	15.8	13.8	81	61.1	53.1	141	106.4	92.5	201	151.7	131.9	261	197.0	171.2
22	16.6	14.4	82	61.9	53.8	142	107.2	93.2	202	152.5	132.5	262	197.7	171.9
23	17.4	15.1	83	62.6	54.5	143	107.9	93.8	203	153.2	133.2	263	198.5	172.5
24	18.1	15.7	84	63.4	55.1	144	108.7	94.5	204	154.0	133.8	264	199.2	173.2
25	18.9	16.4	85	64.2	55.8	145	109.4	95.1	205	154.7	134.5	265	200.0	173.9
26	19.6	17.1	86	64.9	56.4	146	110.2	95.8	206	155.5	135.1	266	200.8	174.5
27	20.4	17.7	87	65.7	57.1	147	110.9	96.4	207	156.2	135.8	267	201.5	175.2
28	21.1	18.4	88	66.4	57.7	148	111.7	97.1	208	157.0	136.5	268	202.3	175.8
29	21.9	19.0	89	67.2	58.4	149	112.5	97.8	209	157.7	137.1	269	203.0	176.5
30	22.6	19.7	90	67.9	59.0	150	113.2	98.4	210	158.5	137.8	270	203.8	177.1
31	23.4	20.3	91	68.7	59.7	151	114.0	99.1	211	159.2	138.4	271	204.5	177.8
32	24.2	21.0	92	69.4	60.4	152	114.7	99.7	212	160.0	139.1	272	205.3	178.4
33	24.9	21.6	93	70.2	61.0	153	115.5	100.4	213	160.8	139.7	273	206.0	179.1
34	25.7	22.3	94	70.9	61.7	154	116.2	101.0	214	161.5	140.4	274	206.8	179.8
35	26.4	23.0	95	71.7	62.3	155	117.0	101.7	215	162.3	141.1	275	207.5	180.4
36	27.2	23.6	96	72.5	63.0	156	117.7	102.3	216	163.0	141.7	276	208.3	181.1
37	27.9	24.3	97	73.2	63.6	157	118.5	103.0	217	163.8	142.4	277	209.1	181.7
38	28.7	24.9	98	74.0	64.3	158	119.2	103.7	218	164.5	143.0	278	209.8	182.4
39	29.4	25.6	99	74.7	64.9	159	120.0	104.3	219	165.3	143.7	279	210.6	183.0
40	30.2	26.2	100	75.5	65.6	160	120.8	105.0	220	166.0	144.3	280	211.3	183.7
41	30.9	26.9	101	76.2	66.3	161	121.5	105.6	221	166.8	145.0	281	212.1	184.4
42	31.7	27.6	102	77.0	66.9	162	122.3	106.3	222	167.5	145.6	282	212.8	185.0
43	32.5	28.2	103	77.7	67.6	163	123.0	106.9	223	168.3	146.3	283	213.6	185.7
44	33.2	28.9	104	78.5	68.2	164	123.8	107.6	224	169.1	147.0	284	214.3	186.3
45	34.0	29.5	105	79.2	68.9	165	124.5	108.2	225	169.8	147.6	285	215.1	187.0
46	34.7	30.2	106	80.0	69.5	166	125.3	108.9	226	170.6	148.3	286	215.8	187.6
47	35.5	30.8	107	80.8	70.2	167	126.0	109.6	227	171.3	148.9	287	216.6	188.3
48	36.2	31.5	108	81.5	70.9	168	126.8	110.2	228	172.1	149.6	288	217.4	188.9
49	37.0	32.1	109	82.3	71.5	169	127.5	110.9	229	172.8	150.2	289	218.1	189.6
50	37.7	32.8	110	83.0	72.2	170	128.3	111.5	230	173.6	150.9	290	218.9	190.3
51	38.5	33.5	111	83.8	72.8	171	129.1	112.2	231	174.3	151.5	291	219.6	190.9
52	39.2	34.1	112	84.5	73.5	172	129.8	112.8	232	175.1	152.2	292	220.4	191.6
53	40.0	34.8	113	85.3	74.1	173	130.6	113.5	233	175.8	152.9	293	221.1	192.2
54	40.8	35.4	114	86.0	74.8	174	131.3	114.2	234	176.6	153.5	294	221.9	192.9
55	41.5	36.1	115	86.8	75.4	175	132.1	114.8	235	177.4	154.2	295	222.6	193.5
56	42.3	36.7	116	87.5	76.1	176	132.8	115.5	236	178.1	154.8	296	223.4	194.2
57	43.0	37.4	117	88.3	76.8	177	133.6	116.1	237	178.9	155.5	297	224.1	194.8
58	43.8	38.1	118	89.1	77.4	178	134.3	116.8	238	179.6	156.1	298	224.9	195.5
59	44.5	38.7	119	89.8	78.1	179	135.1	117.4	239	180.4	156.8	299	225.7	196.2
60	45.3	39.4	120	90.6	78.7	180	135.8	118.1	240	181.1	157.5	300	226.4	196.8
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX. 119

Difference of Latitude and Departure for 42 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.7	0.7	61	45.3	40.8	121	89.9	81.0	181	134.5	121.1	241	179.1	161.3
2	1.5	1.3	62	46.1	41.5	122	90.7	81.6	182	135.3	121.8	242	179.8	161.9
3	2.2	2.0	63	46.8	42.2	123	91.4	82.3	183	136.0	122.5	243	180.6	162.6
4	3.0	2.7	64	47.6	42.8	124	92.1	83.0	184	136.7	123.1	244	181.3	163.3
5	3.7	3.3	65	48.3	43.5	125	92.9	83.6	185	137.5	123.8	245	182.1	163.9
6	4.5	4.0	66	49.0	44.2	126	93.6	84.3	186	138.2	124.5	246	182.8	164.6
7	5.2	4.7	67	49.8	44.8	127	94.4	85.0	187	139.0	125.1	247	183.6	165.3
8	5.9	5.4	68	50.5	45.5	128	95.1	85.6	188	139.7	125.8	248	184.3	165.9
9	6.7	6.0	69	51.3	46.2	129	95.9	86.3	189	140.5	126.5	249	185.0	166.6
10	7.4	6.7	70	52.0	46.8	130	96.6	87.0	190	141.2	127.1	250	185.8	167.3
11	8.2	7.4	71	52.8	47.5	131	97.4	87.7	191	141.9	127.8	251	186.5	168.0
12	8.9	8.0	72	53.5′	48.2	132	98.1	88.3	192	142.7	128.5	252	187.3	168.6
13	9.7	8.7	73	54.2	48.8	133	98.8	89.0	193	143.4	129.1	253	188.0	169.3
14	10.4	9.4	74	55.0	49.5	134	99.6	89.7	194	144.2	129.8	254	188.8	170.0
15	11.1	10.0	75	55.7	50.2	135	100.3	90.3	195	144.9	130.5	255	189.5	170.6
16	11.9	10.7	76	56.5	50.9	136	101.1	91.0	196	145.7	131.1	256	190.2	171.3
17	12.6	11.4	77	57.2	51.5	137	101.8	91.7	197	146.4	131.8	257	191.0	172.0
18	13.4	12.0	78	58.0	52.2	138	102.6	92.3	198	147.1	132.5	258	191.7	172.6
19	14.1	12.7	79	58.7	52.9	139	103.3	93.0	199	147.9	133.2	259	192.5	173.3
20	14.9	13.4	80	59.5	53.5	140	104.0	93.7	200	148.6	133.8	260	193.2	174.0
21	15.6	14.1	81	60.2	54.2	141	104.8	94.3	201	149.4	134.5	261	194.0	174.6
22	16.3	14.7	82	60.9	54.9	142	105.5	95.0	202	150.1	135.2	262	194.7	175.3
23	17.1	15.4	83	61.7	55.5	143	106.3	95.7	203	150.9	135.8	263	195.4	176.0
24	17.8	16.1	84	62.4	56.2	144	107.0	96.4	204	151.6	136.5	264	196.2	176.7
25	18.6	16.7	85	63.2	56.9	145	107.8	97.0	205	152.3	137.2	265	196.9	177.3
26	19.3	17.4	86	63.9	57.5	146	108.5	97.7	206	153.1	137.8	266	197.7	178.0
27	20.1	18.1	87	64.7	58.2	147	109.2	98.4	207	153.8	138.5	267	198.4	178.7
28	20.8	18.7	88	65.4	58.9	148	110.0	99.0	208	154.6	139.2	268	199.2	179.3
29	21.6	19.4	89	66.1	59.6	149	110.7	99.7	209	155.3	139.8	269	199.9	180.0
30	22.3	20.1	90	66.9	60.2	150	111.5	100.4	210	156.1	140.5	270	200.6	180.7
31	23.0	20.7	91	67.6	60.9	151	112.2	101.0	211	156.8	141.2	271	201.4	181.3
32	23.8	21.4	92	68.4	61.6	152	113.0	101.7	212	157.5	141.9	272	202.1	182.0
33	24.5	22.1	93	69.1	62.2	153	113.7	102.4	213	158.3	142.5	273	202.9	182.7
34	25.3	22.8	94	69.9	62.9	154	114.4	103.0	214	159.0	143.2	274	203.6	183.3
35	26.0	23.4	95	70.6	63.6	155	115.2	103.7	215	159.8	143.9	275	204.4	184.0
36	26.8	24.1	96	71.3	64.2	156	115.9	104.4	216	160.5	144.5	276	205.1	184.7
37	27.5	24.8	97	72.1	64.9	157	116.7	105.1	217	161.3	145.2	277	205.9	185.3
38	28.2	25.4	98	72.8	65.6	158	117.4	105.7	218	162.0	145.9	278	206 6	186.0
39	29.0	26.1	99	73.6	66.2	159	118.2	106.4	219	162.7	146.5	279	207.3	186.7
40	29.7	26.8	100	74.3	66.9	160	118.9	107.1	220	163.5	147.2	280	208.1	187.4
41	30.5	27.4	101	75.1	67.6	161	119.6	107.7	221	164.2	147.9	281	208.8	188.0
42	31.2	28.1	102	75.8	68.3	162	120.4	108.4	222	165.0	148.5	282	209.6	188.7
43	32.0	28.8	103	76.5	68.9	163	121.1	109.1	223	165.7	149.2	283	210.3	189.4
44	32.7	29.4	104	77.3	69.6	164	121.9	109.7	224	166.5	149.9	284	211.1	190.0
45	33.4	30.1	105	78.0	70.3	165	122.6	110.4	225	167.2	150.6	285	211.8	190.7
46	34.2	30.8	106	78.8	70.9	166	123.4	111.1	226	168.0	151.2	286	212.5	191.4
47	34.9	31.4	107	79.5	71.6	167	124.1	111.7	227	168.7	151.9	287	213.3	192.0
48	35.7	32.1	108	80.3	72.3	168	124.8	112.4	228	169.4	152.6	288	214.0	192.7
49	36.4	32.8	109	81.0	72.9	169	125.6	113.1	229	170.2	153.2	289	214.8	193.4
50	37.2	33.5	110	81.7	73.6	170	126.3	113.8	230	170.9	153.9	290	215.5	194.0
51	37.9	34.1	111	82.5	74.3	171	127.1	114.4	231	171.7	154.6	291	216.3	194.7
52	38.6	34.8	112	83.2	74.9	172	127.8	115.1	232	172.4	155.2	292	217.0	195.4
53	39.4	35.5	113	84.0	75.6	173	128.6	115.8	233	173.2	155.9	293	217.7	196.1
54	40.1	36.1	114	84.7	76.3	174	129.3	116.4	234	173.9	156.6	294	218.5	196.7
55	40.9	36.8	115	85.5	77.0	175	130.1	117.1	235	174.6	157.2	295	219.2	197.4
56	41.6	37.5	116	86.2	77.6	176	130.8	117.8	236	175.4	157.9	296	220.0	198.1
57	42.4	38.1	117	86.9	78.3	177	131.5	118.4	237	176.1	158.6	297	220.7	198.7
58	43.1	38.8	118	87.7	79.0	178	132.3	119.1	238	176.9	159.3	298	221.5	199.4
59	43.8	39.5	119	88.4	79.6	179	133.0	119.8	239	177.6	159.9	299	222.2	200.1
60	44.6	40.1	120	89.2	80.3	180	133.8	120.4	240	178.4	160.6	300	222.9	200.7
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 48 Degrees.

TABLE IX.

Difference of Latitude and Departure for 43 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.7	0.7	61	44.6	41.6	121	88.5	82.5	181	132.4	123.4	241	176.3	164.4
2	1.5	1.4	62	45.3	42.3	122	89.2	83.2	182	133.1	124.1	242	177.0	165.0
3	2.2	2.0	63	46.1	43.0	123	90.0	83.9	183	133.8	124.8	243	177.7	165.7
4	2.9	2.7	64	46.8	43.6	124	90.7	84.6	184	134.6	125.5	244	178.5	166.4
5	3.7	3.4	65	47.5	44.3	125	91.4	85.2	185	135.3	126.2	245	179.2	167.1
6	4.4	4.1	66	48.3	45.0	126	92.2	85.9	186	136.0	126.9	246	179.9	167.8
7	5.1	4.8	67	49.0	45.7	127	92.9	86.6	187	136.8	127.5	247	180.6	168.5
8	5.9	5.5	68	49.7	46.4	128	93.6	87.3	188	137.5	128.2	248	181.4	169.1
9	6.6	6.1	69	50.5	47.1	129	94.3	88.0	189	138.2	128.9	249	182.1	169.8
10	7.3	6.8	70	51.2	47.7	130	95.1	88.7	190	139.0	129.6	250	182.8	170.5
11	8.0	7.5	71	51.9	48.4	131	95.8	89.3	191	139.7	130.3	251	183.6	171.2
12	8.8	8.2	72	52.7	49.1	132	96.5	90.0	192	140.4	130.9	252	184.3	171.9
13	9.5	8.9	73	53.4	49.8	133	97.3	90.7	193	141.2	131.6	253	185.0	172.5
14	10.2	9.5	74	54.1	50.5	134	98.0	91.4	194	141.9	132.3	254	185.8	173.2
15	11.0	10.2	75	54.9	51.1	135	98.7	92.1	195	142.6	133.0	255	186.5	173.9
16	11.7	10.9	76	55.6	51.8	136	99.5	92.8	196	143.3	133.7	256	187.2	174.6
17	12.4	11.6	77	56.3	52.5	137	100.2	93.4	197	144.1	134.4	257	188.0	175.3
18	13.2	12.3	78	57.0	53.2	138	100.9	94.1	198	144.8	135.0	258	188.7	176.0
19	13.9	13.0	79	57.8	53.9	139	101.7	94.8	199	145.5	135.7	259	189.4	176.6
20	14.6	13.6	80	58.5	54.6	140	102.4	95.5	200	146.3	136.4	260	190.2	177.3
21	15.4	14.3	81	59.2	55.2	141	103.1	96.2	201	147.0	137.1	261	190.9	178.0
22	16.1	15.0	82	60.0	55.9	142	103.9	96.8	202	147.7	137.8	262	191.6	178.7
23	16.8	15.7	83	60.7	56.6	143	104.6	97.5	203	148.5	138.4	263	192.3	179.4
24	17.6	16.4	84	61.4	57.3	144	105.3	98.2	204	149.2	139.1	264	193.1	180.0
25	18.3	17.0	85	62.2	58.0	145	106.0	98.9	205	149.9	139.8	265	193.8	180.7
26	19.0	17.7	86	62.9	58.7	146	106.8	99.6	206	150.7	140.5	266	194.5	181.4
27	19.7	18.4	87	63.6	59.3	147	107.5	100.3	207	151.4	141.2	267	195.3	182.1
28	20.5	19.1	88	64.4	60.0	148	108.2	100.9	208	152.1	141.9	268	196.0	182.8
29	21.2	19.8	89	65.1	60.7	149	109.0	101.6	209	152.9	142.5	269	196.7	183.5
30	21.9	20.5	90	65.8	61.4	150	109.7	102.3	210	153.6	143.2	270	197.5	184.1
31	22.7	21.1	91	66.6	62.1	151	110.4	103.0	211	154.3	143.9	271	198.2	184.8
32	23.4	21.8	92	67.3	62.7	152	111.2	103.7	212	155.0	144.6	272	198.9	185.5
33	24.1	22.5	93	68.0	63.4	153	111.9	104.3	213	155.8	145.3	273	199.7	186.2
34	24.9	23.2	94	68.7	64.1	154	112.6	105.0	214	156.5	145.9	274	200.4	186.9
35	25.6	23.9	95	69.5	64.8	155	113.4	105.7	215	157.2	146.6	275	201.1	187.5
36	26.3	24.6	96	70.2	65.5	156	114.1	106.4	216	158.0	147.3	276	201.9	188.2
37	27.1	25.2	97	70.9	66.2	157	114.8	107.1	217	158.7	148.0	277	202.6	188.9
38	27.8	25.9	98	71.7	66.8	158	115.6	107.8	218	159.4	148.7	278	203.3	189.6
39	28.5	26.6	99	72.4	67.5	159	116.3	108.4	219	160.2	149.4	279	204.0	190.3
40	29.3	27.3	100	73.1	68.2	160	117.0	109.1	220	160.9	150.0	280	204.8	191.0
41	30.0	28.0	101	73.9	68.9	161	117.7	109.8	221	161.6	150.7	281	205.5	191.6
42	30.7	28.6	102	74.6	69.6	162	118.5	110.5	222	162.4	151.4	282	206.2	192.3
43	31.4	29.3	103	75.3	70.2	163	119.2	111.2	223	163.1	152.1	283	207.0	193.0
44	32.2	30.0	104	76.1	70.9	164	119.9	111.8	224	163.8	152.8	284	207.7	193.7
45	32.9	30.7	105	76.8	71.6	165	120.7	112.5	225	164.6	153.4	285	208.4	194.4
46	33.6	31.4	106	77.5	72.3	166	121.4	113.2	226	165.3	154.1	286	209.2	195.1
47	34.4	32.1	107	78.3	73.0	167	122.1	113.9	227	166.0	154.8	287	209.9	195.7
48	35.1	32.7	108	79.0	73.7	168	122.9	114.6	228	166.7	155.5	288	210.6	196.4
49	35.8	33.4	109	79.7	74.3	169	123.6	115.3	229	167.5	156.2	289	211.4	197.1
50	36.6	34.1	110	80.4	75.0	170	124.3	115.9	230	168.2	156.9	290	212.1	197.8
51	37.3	34.8	111	81.2	75.7	171	125.1	116.6	231	168.9	157.5	291	212.8	198.5
52	38.0	35.5	112	81.9	76.4	172	125.8	117.3	232	169.7	158.2	292	213.6	199.1
53	38.8	36.1	113	82.6	77.1	173	126.5	118.0	233	170.4	158.9	293	214.3	199.8
54	39.5	36.8	114	83.4	77.7	174	127.3	118.7	234	171.1	159.6	294	215.0	200.5
55	40.2	37.5	115	84.1	78.4	175	128.0	119.3	235	171.9	160.3	295	215.7	201.2
56	41.0	38.2	116	84.8	79.1	176	128.7	120.0	236	172.6	161.0	296	216.5	201.9
57	41.7	38.9	117	85.6	79.8	177	129.4	120.7	237	173.3	161.6	297	217.2	202.6
58	42.4	39.6	118	86.3	80.5	178	130.2	121.4	238	174.1	162.3	298	217.9	203.2
59	43.1	40.2	119	87.0	81.2	179	130.9	122.1	239	174.8	163.0	299	218.7	203.9
60	43.9	40.9	120	87.8	81.8	180	131.6	122.8	240	175.5	163.7	300	219.4	204.6
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

TABLE IX.

121

Difference of Latitude and Departure for 44 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.7	0.7	61	43.9	42.4	121	87.0	84.1	181	130.2	125.7	241	173.4	167.4
2	1.4	1.4	62	44.6	43.1	122	87.8	84.7	182	130.9	126.4	242	174.1	168.1
3	2.2	2.1	63	45.3	43.8	123	88.5	85.4	183	131.6	127.1	243	174.8	168.8
4	2.9	2.8	64	46.0	44.5	124	89.2	86.1	184	132.4	127.8	244	175.5	169.5
5	3.6	3.5	65	46.8	45.2	125	89.9	86.8	185	133.1	128.5	245	176.2	170.2
6	4.3	4.2	66	47.5	45.8	126	90.6	87.5	186	133.8	129.2	246	177.0	170.9
7	5.0	4.9	67	48.2	46.5	127	91.4	88.2	187	134.5	129.9	247	177.7	171.6
8	5.8	5.6	68	48.9	47.2	128	92.1	88.9	188	135.2	130.6	248	178.4	172.3
9	6.5	6.3	69	49.6	47.9	129	92.8	89.6	189	136.0	131.3	249	179.1	173.0
10	7.2	6.9	70	50.4	48.6	130	93.5	90.3	190	136.7	132.0	250	179.8	173.7
11	7.9	7.6	71	51.1	49.3	131	94.2	91.0	191	137.4	132.7	251	180.6	174.4
12	8.6	8.3	72	51.8	50.0	132	95.0	91.7	192	138.1	133.4	252	181.3	175.1
13	9.4	9.0	73	52.5	50.7	133	95.7	92.4	193	138.8	134.1	253	182.0	175.7
14	10.1	9.7	74	53.2	51.4	134	96.4	93.1	194	139.6	134.8	254	182.7	176.4
15	10.8	10.4	75	54.0	52.1	135	97.1	93.8	195	140.3	135.5	255	183.4	177.1
16	11.5	11.1	76	54.7	52.8	136	97.8	94.5	196	141.0	136.2	256	184.2	177.8
17	12.2	11.8	77	55.4	53.5	137	98.5	95.2	197	141.7	136.8	257	184.9	178.5
18	12.9	12.5	78	56.1	54.2	138	99.3	95.9	198	142.4	137.5	258	185.6	179.2
19	13.7	13.2	79	56.8	54.9	139	100.0	96.6	199	143.1	138.2	259	186.3	179.9
20	14.4	13.9	80	57.5	55.6	140	100.7	97.3	200	143.9	138.9	260	187.0	180.6
21	15.1	14.6	81	58.3	56.3	141	101.4	97.9	201	144.6	139.6	261	187.7	181.3
22	15.8	15.3	82	59.0	57.0	142	102.1	98.6	202	145.3	140.3	262	188.5	182.0
23	16.5	16.0	83	59.7	57.7	143	102.9	99.3	203	146.0	141.0	263	189.2	182.7
24	17.3	16.7	84	60.4	58.4	144	103.6	100.0	204	146.7	141.7	264	189.9	183.4
25	18.0	17.4	85	61.1	59.0	145	104.3	100.7	205	147.5	142.4	265	190.6	184.1
26	18.7	18.1	86	61.9	59.7	146	105.0	101.4	206	148.2	143.1	266	191.3	184.8
27	19.4	18.8	87	62.6	60.4	147	105.7	102.1	207	148.9	143.8	267	192.1	185.5
28	20.1	19.5	88	63.3	61.1	148	106.5	102.8	208	149.6	144.5	268	192.8	186.2
29	20.9	20.1	89	64.0	61.8	149	107.2	103.5	209	150.3	145.2	269	193.5	186.9
30	21.6	20.8	90	64.7	62.5	150	107.9	104.2	210	151.1	145.9	270	194.2	187.6
31	22.3	21.5	91	65.5	63.2	151	108.6	104.9	211	151.8	146.6	271	194.9	188.3
32	23.0	22.2	92	66.2	63.9	152	109.3	105.6	212	152.5	147.3	272	195.7	188.9
33	23.7	22.9	93	66.9	64.6	153	110.1	106.3	213	153.2	148.0	273	196.4	189.6
34	24.5	23.6	94	67.6	65.3	154	110.8	107.0	214	153.9	148.7	274	197.1	190.3
35	25.2	24.3	95	68.3	66.0	155	111.5	107.7	215	154.7	149.4	275	197.8	191.0
36	25.9	25.0	96	69.1	66.7	156	112.2	108.4	216	155.4	150.0	276	198.5	191.7
37	26.6	25.7	97	69.8	67.4	157	112.9	109.1	217	156.1	150.7	277	199.3	192.4
38	27.3	26.4	98	70.5	68.1	158	113.7	109.8	218	156.8	151.4	278	200.0	193.1
39	28.1	27.1	99	71.2	68.8	159	114.4	110.5	219	157.5	152.1	279	200.7	193.8
40	28.8	27.8	100	71.9	69.5	160	115.1	111.1	220	158.3	152.8	280	201.4	194.5
41	29.5	28.5	101	72.7	70.2	161	115.8	111.8	221	159.0	153.5	281	202.1	195.2
42	30.2	29.2	102	73.4	70.9	162	116.5	112.5	222	159.7	154.2	282	202.9	195.9
43	30.9	29.9	103	74.1	71.5	163	117.3	113.2	223	160.4	154.9	283	203.6	196.6
44	31.7	30.6	104	74.8	72.2	164	118.0	113.9	224	161.1	155.6	284	204.3	197.3
45	32.4	31.3	105	75.5	72.9	165	118.7	114.6	225	161.9	156.3	285	205.0	198.0
46	33.1	32.0	106	76.3	73.6	166	119.4	115.3	226	162.6	157.0	286	205.7	198.7
47	33.8	32.6	107	77.0	74.3	167	120.1	116.0	227	163.3	157.7	287	206.5	199.4
48	34.5	33.3	108	77.7	75.0	168	120.8	116.7	228	164.0	158.4	288	207.2	200.1
49	35.2	34.0	109	78.4	75.7	169	121.6	117.4	229	164.7	159.1	289	207.9	200.8
50	36.0	34.7	110	79.1	76.4	170	122.3	118.1	230	165.4	159.8	290	208.6	201.5
51	36.7	35.4	111	79.8	77.1	171	123.0	118.8	231	166.2	160.5	291	209.3	202.1
52	37.4	36.1	112	80.6	77.8	172	123.7	119.5	232	166.9	161.2	292	210.0	202.8
53	38.1	36.8	113	81.3	78.5	173	124.4	120.2	233	167.6	161.9	293	210.8	203.5
54	38.8	37.5	114	82.0	79.2	174	125.2	120.9	234	168.3	162.6	294	211.5	204.2
55	39.6	38.2	115	82.7	79.9	175	125.9	121.6	235	169.0	163.2	295	212.2	204.9
56	40.3	38.9	116	83.4	80.6	176	126.6	122.3	236	169.8	163.9	296	212.9	205.6
57	41.0	39.6	117	84.2	81.3	177	127.3	123.0	237	170.5	164.6	297	213.6	206.3
58	41.7	40.3	118	84.9	82.0	178	128.0	123.6	238	171.2	165.3	298	214.4	207.0
59	42.4	41.0	119	85.6	82.7	179	128.8	124.3	239	171.9	166.0	299	215.1	207.7
60	43.2	41.7	120	86.3	83.4	180	129.5	125.0	240	172.6	166.7	300	215.8	208.4
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 46 Degrees.

TABLE IX.

Difference of Latitude and Departure for 45 Degrees.

Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	0.7	0.7	61	43.1	43.1	121	85.6	85.6	181	128.0	128.0	241	170.4	170.4
2	1.4	1.4	62	43.8	43.8	122	86.3	86.3	182	128.7	128.7	242	171.1	171.1
3	2.1	2.1	63	44.5	44.5	123	87.0	87.0	183	129.4	129.4	243	171.8	171.8
4	2.8	2.8	64	45.3	45.3	124	87.7	87.7	184	130.1	130.1	244	172.5	172.5
5	3.5	3.5	65	46.0	46.0	125	88.4	88.4	185	130.8	130.8	245	173.2	173.2
6	4.2	4.2	66	46.7	46.7	126	89.1	89.1	186	131.5	131.5	246	173.9	173.9
7	4.9	4.9	67	47.4	47.4	127	89.8	89.8	187	132.2	132.2	247	174.7	174.7
8	5.7	5.7	68	48.1	48.1	128	90.5	90.5	188	132.9	132.9	248	175.4	175.4
9	6.4	6.4	69	48.8	48.8	129	91.2	91.2	189	133.6	133.6	249	176.1	176.1
10	7.1	7.1	70	49.5	49.5	130	91.9	91.9	190	134.4	134.4	250	176.8	176.8
11	7.8	7.8	71	50.2	50.2	131	92.6	92.6	191	135.1	135.1	251	177.5	177.5
12	8.5	8.5	72	50.9	50.9	132	93.3	93.3	192	135.8	135.8	252	178.2	178.2
13	9.2	9.2	73	51.6	51.6	133	94.0	94.0	193	136.5	136.5	253	178.9	178.9
14	9.9	9.9	74	52.3	52.3	134	94.8	94.8	194	137.2	137.2	254	179.6	179.6
15	10.6	10.6	75	53.0	53.0	135	95.5	95.5	195	137.9	137.9	255	180.3	180.3
16	11.3	11.3	76	53.7	53.7	136	96.2	96.2	196	138.6	138.6	256	181.0	181.0
17	12.0	12.0	77	54.4	54.4	137	96.9	96.9	197	139.3	139.3	257	181.7	181.7
18	12.7	12.7	78	55.2	55.2	138	97.6	97.6	198	140.0	140.0	258	182.4	182.4
19	13.4	13.4	79	55.9	55.9	139	98.3	98.3	199	140.7	140.7	259	183.1	183.1
20	14.1	14.1	80	56.6	56.6	140	99.0	99.0	200	141.4	141.4	260	183.8	183.8
21	14.8	14.8	81	57.3	57.3	141	99.7	99.7	201	142.1	142.1	261	184.6	184.6
22	15.6	15.6	82	58.0	58.0	142	100.4	100.4	202	142.8	142.8	262	185.3	185.3
23	16.3	16.3	83	58.7	58.7	143	101.1	101.1	203	143.5	143.5	263	186.0	186.0
24	17.0	17.0	84	59.4	59.4	144	101.8	101.8	204	144.2	144.2	264	186.7	186.7
25	17.7	17.7	85	60.1	60.1	145	102.5	102.5	205	145.0	145.0	265	187.4	187.4
26	18.4	18.4	86	60.8	60.8	146	103.2	103.2	206	145.7	145.7	266	188.1	188.1
27	19.1	19.1	87	61.5	61.5	147	103.9	103.9	207	146.4	146.4	267	188.8	188.8
28	19.8	19.8	88	62.2	62.2	148	104.7	104.7	208	147.1	147.1	268	189.5	189.5
29	20.5	20.5	89	62.9	62.9	149	105.4	105.4	209	147.8	147.8	269	190.2	190.2
30	21.2	21.2	90	63.6	63.6	150	106.1	106.1	210	148.5	148.5	270	190.9	190.9
31	21.9	21.9	91	64.3	64.3	151	106.8	106.8	211	149.2	149.2	271	191.6	191.6
32	22.6	22.6	92	65.1	65.1	152	107.5	107.5	212	149.9	149.9	272	192.3	192.3
33	23.3	23.3	93	65.8	65.8	153	108.2	108.2	213	150.6	150.6	273	193.0	193.0
34	24.0	24.0	94	66.5	66.5	154	108.9	108.9	214	151.3	151.3	274	193.7	193.7
35	24.7	24.7	95	67.2	67.2	155	109.6	109.6	215	152.0	152.0	275	194.5	194.5
36	25.5	25.5	96	67.9	67.9	156	110.3	110.3	216	152.7	152.7	276	195.2	195.2
37	26.2	26.2	97	68.6	68.6	157	111.0	111.0	217	153.4	153.4	277	195.9	195.9
38	26.9	26.9	98	69.3	69.3	158	111.7	111.7	218	154.1	154.1	278	196.6	196.6
39	27.6	27.6	99	70.0	70.0	159	112.4	112.4	219	154.9	154.9	279	197.3	197.3
40	28.3	28.3	100	70.7	70.7	160	113.1	113.1	220	155.6	155.6	280	198.0	198.0
41	29.0	29.0	101	71.4	71.4	161	113.8	113.8	221	156.3	156.3	281	198.7	198.7
42	29.7	29.7	102	72.1	72.1	162	114.6	114.6	222	157.0	157.0	282	199.4	199.4
43	30.4	30.4	103	72.8	72.8	163	115.3	115.3	223	157.7	157.7	283	200.1	200.1
44	31.1	31.1	104	73.5	73.5	164	116.0	116.0	224	158.4	158.4	284	200.8	200.8
45	31.8	31.8	105	74.2	74.2	165	116.7	116.7	225	159.1	159.1	285	201.5	201.5
46	32.5	32.5	106	75.0	75.0	166	117.4	117.4	226	159.8	159.8	286	202.2	202.2
47	33.2	33.2	107	75.7	75.7	167	118.1	118.1	227	160.5	160.5	287	202.9	202.9
48	33.9	33.9	108	76.4	76.4	168	118.8	118.8	228	161.2	161.2	288	203.6	203.6
49	34.6	34.6	109	77.1	77.1	169	119.5	119.5	229	161.9	161.9	289	204.4	204.4
50	35.4	35.4	110	77.8	77.8	170	120.2	120.2	230	162.6	162.6	290	205.1	205.1
51	36.1	36.1	111	78.5	78.5	171	120.9	120.9	231	163.3	163.3	291	205.8	205.8
52	36.8	36.8	112	79.2	79.2	172	121.6	121.6	232	164.0	164.0	292	206.5	206.5
53	37.5	37.5	113	79.9	79.9	173	122.3	122.3	233	164.8	164.8	293	207.2	207.2
54	38.2	38.2	114	80.6	80.6	174	123.0	123.0	234	165.5	165.5	294	207.9	207.9
55	38.9	38.9	115	81.3	81.3	175	123.7	123.7	235	166.2	166.2	295	208.6	208.6
56	39.6	39.6	116	82.0	82.0	176	124.5	124.5	236	166.9	166.9	296	209.3	209.3
57	40.3	40.3	117	82.7	82.7	177	125.2	125.2	237	167.6	167.6	297	210.0	210.0
58	41.0	41.0	118	83.4	83.4	178	125.9	125.9	238	168.3	168.3	298	210.7	210.7
59	41.7	41.7	119	84.1	84.1	179	126.6	126.6	239	169.0	169.0	299	211.4	211.4
60	42.4	42.4	120	84.9	84.9	180	127.3	127.3	240	169.7	169.7	300	212.1	212.1
Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.	Dist.	Dep.	Lat.

[For 45 Degrees.

TABLE X. 123

For turning Degrees and Minutes into Time, and the contrary.

D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.
M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.
1	0 4	61	4 4	121	8 4	181	12 4	241	16 4	301	20 4
2	0 8	62	4 8	122	8 8	182	12 8	242	16 8	302	20 8
3	0 12	63	4 12	123	8 12	183	12 12	243	16 12	303	20 12
4	0 16	64	4 16	124	8 16	184	12 16	244	16 16	304	20 16
5	0 20	65	4 20	125	8 20	185	12 20	245	16 20	305	20 20
6	0 24	66	4 24	126	8 24	186	12 24	246	16 24	306	20 24
7	0 28	67	4 28	127	8 28	187	12 28	247	16 28	307	20 28
8	0 32	68	4 32	128	8 32	188	12 32	248	16 32	308	20 32
9	0 36	69	4 36	129	8 36	189	12 36	249	16 36	309	20 36
10	0 40	70	4 40	130	8 40	190	12 40	250	16 40	310	20 40
11	0 44	71	4 44	131	8 44	191	12 44	251	16 44	311	20 44
12	0 48	72	4 48	132	8 48	192	12 48	252	16 48	312	20 48
13	0 52	73	4 52	133	8 52	193	12 52	253	16 52	313	20 52
14	0 56	74	4 56	134	8 56	194	12 56	254	16 56	314	20 56
15	1 0	75	5 0	135	9 0	195	13 0	255	17 0	315	21 0
16	1 4	76	5 4	136	9 4	196	13 4	256	17 4	316	21 4
17	1 8	77	5 8	137	9 8	197	13 8	257	17 8	317	21 8
18	1 12	78	5 12	138	9 12	198	13 12	258	17 12	318	21 12
19	1 16	79	5 16	139	9 16	199	13 16	259	17 16	319	21 16
20	1 20	80	5 20	140	9 20	200	13 20	260	17 20	320	21 20
21	1 24	81	5 24	141	9 24	201	13 24	261	17 24	321	21 24
22	1 28	82	5 28	142	9 28	202	13 28	262	17 28	322	21 28
23	1 32	83	5 32	143	9 32	203	13 32	263	17 32	323	21 32
24	1 36	84	5 36	144	9 36	204	13 36	264	17 36	324	21 36
25	1 40	85	5 40	145	9 40	205	13 40	265	17 40	325	21 40
26	1 44	86	5 44	146	9 44	206	13 44	266	17 44	326	21 44
27	1 48	87	5 48	147	9 48	207	13 48	267	17 48	327	21 48
28	1 52	88	5 52	148	9 52	208	13 52	268	17 52	328	21 52
29	1 56	89	5 56	149	9 56	209	13 56	269	17 56	329	21 56
30	2 0	90	6 0	150	10 0	210	14 0	270	18 0	330	22 0
31	2 4	91	6 4	151	10 4	211	14 4	271	18 4	331	22 4
32	2 8	92	6 8	152	10 8	212	14 8	272	18 8	332	22 8
33	2 12	93	6 12	153	10 12	213	14 12	273	18 12	333	22 12
34	2 16	94	6 16	154	10 16	214	14 16	274	18 16	334	22 16
35	2 20	95	6 20	155	10 20	215	14 20	275	18 20	335	22 20
36	2 24	96	6 24	156	10 24	216	14 24	276	18 24	336	22 24
37	2 28	97	6 28	157	10 28	217	14 28	277	18 28	337	22 28
38	2 32	98	6 32	158	10 32	218	14 32	278	18 32	338	22 32
39	2 36	99	6 36	159	10 36	219	14 36	279	18 36	339	22 36
40	2 40	100	6 40	160	10 40	220	14 40	280	18 40	340	22 40
41	2 44	101	6 44	161	10 44	221	14 44	281	18 44	341	22 44
42	2 48	102	6 48	162	10 48	222	14 48	282	18 48	342	22 48
43	2 52	103	6 52	163	10 52	223	14 52	283	18 52	343	22 52
44	2 56	104	6 56	164	10 56	224	14 56	284	18 56	344	22 56
45	3 0	105	7 0	165	11 0	225	15 0	285	19 0	345	23 0
46	3 4	106	7 4	166	11 4	226	15 4	286	19 4	346	23 4
47	3 8	107	7 8	167	11 8	227	15 8	287	19 8	347	23 8
48	3 12	108	7 12	168	11 12	228	15 12	288	19 12	348	23 12
49	3 16	109	7 16	169	11 16	229	15 16	289	19 16	349	23 16
50	3 20	110	7 20	170	11 20	230	15 20	290	19 20	350	23 20
51	3 24	111	7 24	171	11 24	231	15 24	291	19 24	351	23 24
52	3 28	112	7 28	172	11 28	232	15 28	292	19 28	352	23 28
53	3 32	113	7 32	173	11 32	233	15 32	293	19 32	353	23 32
54	3 36	114	7 36	174	11 36	234	15 36	294	19 36	354	23 36
55	3 40	115	7 40	175	11 40	235	15 40	295	19 40	355	23 40
56	3 44	116	7 44	176	11 44	236	15 44	296	19 44	356	23 44
57	3 48	117	7 48	177	11 48	237	15 48	297	19 48	357	23 48
58	3 52	118	7 52	178	11 52	238	15 52	298	19 52	358	23 52
59	3 56	119	7 56	179	11 56	239	15 56	299	19 56	359	23 56
60	4 0	120	8 0	180	12 0	240	16 0	300	20 0	360	24 0
M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.	M.	M. S.
D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.	D.	H. M.

TABLE XI.

Meridional Parts, or Increased Latitudes.

M.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	M.
0	0.0	59.6	119.2	178.9	238.6	298.4	358.3	418.3	478.4	538.6	599.1	0
1	1.0	60.6	120.2	179.9	239.6	299.4	359.3	419.3	479.4	539.7	600.1	1
2	2.0	61.6	121.2	180.9	240.6	300.4	360.3	420.3	480.4	540.7	601.1	2
3	3.0	62.6	122.2	181.9	241.6	301.4	361.3	421.3	481.4	541.7	602.1	3
4	4.0	63.6	123.2	182.9	242.6	302.4	362.3	422.3	482.4	542.7	603.1	4
5	5.0	64.6	124.2	183.9	243.6	303.4	363.3	423.3	483.4	543.7	604.1	5
6	6.0	65.6	125.2	184.9	244.6	304.4	364.3	424.3	484.4	544.7	605.1	6
7	7.0	66.6	126.2	185.8	245.6	305.4	365.3	425.3	485.4	545.7	606.2	7
8	8.0	67.6	127.2	186.8	246.6	306.4	366.3	426.3	486.4	546.7	607.2	8
9	8.9	68.5	128.2	187.8	247.6	307.4	367.3	427.3	487.4	547.7	608.2	9
10	9.9	69.5	129.2	188.8	248.6	308.4	368.3	428.3	488.4	548.7	609.2	10
11	10.9	70.5	130.2	189.8	249.6	309.4	369.3	429.3	489.4	549.7	610.2	11
12	11.9	71.5	131.2	190.8	250.6	310.4	370.3	430.3	490.4	550.7	611.2	12
13	12.9	72.5	132.2	191.8	251.5	311.4	371.3	431.3	491.4	551.7	612.2	13
14	13.9	73.5	133.1	192.8	252.5	312.3	372.3	432.3	492.4	552.7	613.2	14
15	14.9	74.5	134.1	193.8	253.5	313.3	373.3	433.3	493.4	553.7	614.2	15
16	15.9	75.5	135.1	194.8	254.5	314.3	374.3	434.3	494.4	554.8	615.2	16
17	16.9	76.5	136.1	195.8	255.5	315.3	375.3	435.3	495.4	555.8	616.2	17
18	17.9	77.5	137.1	196.8	256.5	316.3	376.3	436.3	496.4	556.8	617.3	18
19	18.9	78.5	138.1	197.8	257.5	317.3	377.3	437.3	497.4	557.8	618.3	19
20	19.9	79.5	139.1	198.8	258.5	318.3	378.3	438.3	498.5	558.8	619.3	20
21	20.9	80.5	140.1	199.8	259.5	319.3	379.2	439.3	499.5	559.8	620.3	21
22	21.9	81.5	141.1	200.8	260.5	320.3	380.2	440.3	500.5	560.8	621.3	22
23	22.9	82.5	142.1	201.8	261.5	321.3	381.2	441.3	501.5	561.8	622.3	23
24	23.8	83.5	143.1	202.8	262.5	322.3	382.2	442.3	502.5	562.8	623.3	24
25	24.8	84.4	144.1	203.8	263.5	323.3	383.2	443.3	503.5	563.8	624.3	25
26	25.8	85.4	145.1	204.8	264.5	324.3	384.2	444.3	504.5	564.8	625.3	26
27	26.8	86.4	146.1	205.7	265.5	325.3	385.2	445.3	505.5	565.8	626.3	27
28	27.8	87.4	147.1	206.7	266.5	326.3	386.2	446.3	506.5	566.8	627.4	28
29	28.8	88.4	148.1	207.7	267.5	327.3	387.2	447.3	507.5	567.8	628.4	29
30	29.8	89.4	149.1	208.7	268.5	328.3	388.2	448.3	508.5	568.8	629.4	30
31	30.8	90.4	150.0	209.7	269.5	329.3	389.2	449.3	509.5	569.9	630.4	31
32	31.8	91.4	151.0	210.7	270.5	330.3	390.2	450.3	510.5	570.9	631.4	32
33	32.8	92.4	152.0	211.7	271.5	331.3	391.2	451.3	511.5	571.9	632.4	33
34	33.8	93.4	153.0	212.7	272.5	332.3	392.2	452.3	512.5	572.9	633.4	34
35	34.8	94.4	154.0	213.7	273.5	333.3	393.2	453.3	513.5	573.9	634.4	35
36	35.8	95.4	155.0	214.7	274.5	334.3	394.2	454.3	514.5	574.9	635.4	36
37	36.8	96.4	156.0	215.7	275.5	335.3	395.2	455.3	515.5	575.9	636.5	37
38	37.8	97.4	157.0	216.7	276.5	336.3	396.2	456.3	516.5	576.9	637.5	38
39	38.7	98.4	158.0	217.7	277.5	337.3	397.2	457.3	517.5	577.9	638.5	39
40	39.7	99.4	159.0	218.7	278.4	338.3	398.2	458.3	518.5	578.9	639.5	40
41	40.7	100.3	160.0	219.7	279.4	339.3	399.2	459.3	519.5	579.9	640.5	41
42	41.7	101.3	161.0	220.7	280.4	340.3	400.2	460.3	520.6	580.9	641.5	42
43	42.7	102.3	162.0	221.7	281.4	341.3	401.2	461.3	521.6	581.9	642.5	43
44	43.7	103.3	163.0	222.7	282.4	342.3	402.2	462.3	522.6	583.0	643.5	44
45	44.7	104.3	164.0	223.7	283.4	343.3	403.2	463.3	523.6	584.0	644.5	45
46	45.7	105.3	165.0	224.7	284.4	344.3	404.2	464.3	524.6	585.0	645.6	46
47	46.7	106.3	166.0	225.7	285.4	345.3	405.3	465.3	525.6	586.0	646.6	47
48	47.7	107.3	167.0	226.7	286.4	346.3	406.3	466.3	526.6	587.0	647.6	48
49	48.7	108.3	167.9	227.6	287.4	347.3	407.3	467.3	527.6	588.0	648.6	49
50	49.7	109.3	168.9	228.6	288.4	348.3	408.3	468.3	528.6	589.0	649.6	50
51	50.7	110.3	169.9	229.6	289.4	349.3	409.3	469.4	529.6	590.0	650.6	51
52	51.7	111.3	170.9	230.6	290.4	350.3	410.3	470.4	530.6	591.0	651.6	52
53	52.7	112.3	171.9	231.6	291.4	351.3	411.3	471.4	531.6	592.0	652.6	53
54	53.6	113.3	172.9	232.6	292.4	352.3	412.3	472.4	532.6	593.0	653.6	54
55	54.6	114.3	173.9	233.6	293.4	353.3	413.3	473.4	533.6	594.0	654.7	55
56	55.6	115.3	174.9	234.6	294.4	354.3	414.3	474.4	534.6	595.1	655.7	56
57	56.6	116.2	175.9	235.6	295.4	355.3	415.3	475.4	535.6	596.1	656.7	57
58	57.6	117.2	176.9	236.6	296.4	356.3	416.3	476.4	536.6	597.1	657.7	58
59	58.6	118.2	177.9	237.6	297.4	357.3	417.3	477.4	537.6	598.1	658.7	59
M.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	M.

TABLE XI. 125

Meridional Parts, or Increased Latitudes.

M.	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	M.
	′	′	′	′	′	′	′	′	′	′	′	
0	659.7	720.6	781.6	842.9	904.5	966.4	1028.6	1091.1	1154.0	1217.3	1281.0	0
1	660.7	721.6	782.6	844.0	905.6	967.4	1029.6	1092.2	1155.1	1218.4	1282.0	1
2	661.7	722.6	783.7	845.0	906.6	968.5	1030.7	1093.2	1156.1	1219.4	1283.1	2
3	662.8	723.6	784.7	846.0	907.6	969.5	1031.7	1094.3	1157.2	1220.5	1284.2	3
4	663.8	724.6	785.7	847.0	908.6	970.5	1032.8	1095.3	1158.2	1221.5	1285.2	4
5	664.8	725.6	786.7	848.1	909.7	971.6	1033.8	1096.4	1159.3	1222.6	1286.3	5
6	665.8	726.7	787.7	849.1	910.7	972.6	1034.8	1097.4	1160.3	1223.6	1287.4	6
7	666.8	727.7	788.8	850.1	911.7	973.6	1035.9	1098.4	1161.4	1224.7	1288.4	7
8	667.8	728.7	789.8	851.1	912.8	974.7	1036.9	1099.5	1162.4	1225.8	1289.5	8
9	668.8	729.7	790.8	852.2	913.8	975.7	1038.0	1100.5	1163.5	1226.8	1290.6	9
10	669.8	730.7	791.8	853.2	914.8	976.7	1039.0	1101.6	1164.5	1227.9	1291.6	10
11	670.9	731.7	792.8	854.2	915.8	977.8	1040.0	1102.6	1165.6	1228.9	1292.7	11
12	671.9	732.7	793.9	855.2	916.9	978.8	1041.1	1103.7	1166.6	1230.0	1293.8	12
13	672.9	733.8	794.9	856.3	917.9	979.9	1042.1	1104.7	1167.7	1231.1	1294.8	13
14	673.9	734.8	795.9	857.3	918.9	980.9	1043.2	1105.8	1168.7	1232.1	1295.9	14
15	674.9	735.8	796.9	858.3	920.0	981.9	1044.2	1106.8	1169.8	1233.2	1297.0	15
16	675.9	736.8	797.9	859.3	921.0	983.0	1045.2	1107.9	1170.9	1234.2	1298.0	16
17	676.9	737.8	799.0	860.4	922.0	984.0	1046.3	1108.9	1171.9	1235.3	1299.1	17
18	677.9	738.9	800.0	861.4	923.1	985.0	1047.3	1110.0	1173.0	1236.4	1300.2	18
19	679.0	739.9	801.0	862.4	924.1	986.1	1048.4	1111.0	1174.0	1237.4	1301.2	19
20	680.0	740.9	802.0	863.4	925.1	987.1	1049.4	1112.1	1175.1	1238.5	1302.3	20
21	681.0	741.9	803.1	864.5	926.1	988.1	1050.4	1113.1	1176.1	1239.5	1303.4	21
22	682.0	742.9	804.1	865.5	927.2	989.2	1051.5	1114.1	1177.2	1240.6	1304.4	22
23	683.0	743.9	805.1	866.5	928.2	990.2	1052.5	1115.2	1178.2	1241.7	1305.5	23
24	684.0	745.0	806.1	867.5	929.2	991.2	1053.6	1116.2	1179.3	1242.7	1306.6	24
25	685.0	746.0	807.1	868.6	930.3	992.3	1054.6	1117.3	1180.3	1243.8	1307.6	25
26	686.1	747.0	808.2	869.6	931.3	993.3	1055.7	1118.3	1181.4	1244.8	1308.7	26
27	687.1	748.0	809.2	870.6	932.3	994.4	1056.7	1119.4	1182.4	1245.9	1309.8	27
28	688.1	749.0	810.2	871.6	933.4	995.4	1057.7	1120.4	1183.5	1247.0	1310.8	28
29	689.1	750.0	811.2	872.7	934.4	996.4	1058.8	1121.5	1184.6	1248.0	1311.9	29
30	690.1	751.1	812.2	873.7	935.4	997.5	1059.8	1122.5	1185.6	1249.1	1313.0	30
31	691.1	752.1	813.3	874.7	936.5	998.5	1060.9	1123.6	1186.7	1250.1	1314.0	31
32	692.1	753.1	814.3	875.7	937.5	999.5	1061.9	1124.6	1187.7	1251.2	1315.1	32
33	693.2	754.1	815.3	876.8	938.5	1000.6	1062.9	1125.7	1188.8	1252.3	1316.2	33
34	694.2	755.1	816.3	877.8	939.6	1001.6	1064.0	1126.7	1189.8	1253.3	1317.3	34
35	695.2	756.1	817.4	878.8	940.6	1002.6	1065.0	1127.8	1190.9	1254.4	1318.3	35
36	696.2	757.2	818.4	879.9	941.6	1003.7	1066.1	1128.8	1191.9	1255.5	1319.4	36
37	697.2	758.2	819.4	880.9	942.6	1004.7	1067.1	1129.9	1193.0	1256.5	1320.5	37
38	698.2	759.2	820.4	881.9	943.7	1005.8	1068.2	1130.9	1194.0	1257.6	1321.5	38
39	699.2	760.2	821.4	882.9	944.7	1006.8	1069.2	1132.0	1195.1	1258.6	1322.6	39
40	700.3	761.2	822.5	884.0	945.7	1007.8	1070.2	1133.0	1196.2	1259.7	1323.7	40
41	701.3	762.3	823.5	885.0	946.8	1008.9	1071.3	1134.1	1197.2	1260.8	1324.7	41
42	702.3	763.3	824.5	886.0	947.8	1009.9	1072.3	1135.1	1198.3	1261.8	1325.8	42
43	703.3	764.3	825.5	887.0	948.8	1010.9	1073.4	1136.2	1199.3	1262.9	1326.9	43
44	704.3	765.3	826.6	888.1	949.9	1012.0	1074.4	1137.2	1200.4	1264.0	1327.9	44
45	705.3	766.3	827.6	889.1	950.9	1013.0	1075.5	1138.3	1201.4	1265.0	1329.0	45
46	706.3	767.4	828.6	890.1	951.9	1014.1	1076.5	1139.3	1202.5	1266.1	1330.1	46
47	707.4	768.4	829.6	891.2	953.0	1015.1	1077.6	1140.4	1203.6	1267.1	1331.2	47
48	708.4	769.4	830.7	892.2	954.0	1016.1	1078.6	1141.4	1204.6	1268.2	1332.2	48
49	709.4	770.4	831.7	893.2	955.0	1017.2	1079.6	1142.5	1205.7	1269.3	1333.3	49
50	710.4	771.4	832.7	894.2	956.1	1018.2	1080.7	1143.5	1206.7	1270.3	1334.4	50
51	711.4	772.4	833.7	895.3	957.1	1019.2	1081.7	1144.6	1207.8	1271.4	1335.4	51
52	712.4	773.5	834.7	896.3	958.1	1020.3	1082.8	1145.6	1208.8	1272.5	1336.5	52
53	713.4	774.5	835.8	897.3	959.2	1021.3	1083.8	1146.7	1209.9	1273.5	1337.6	53
54	714.5	775.5	836.8	898.4	960.2	1022.4	1084.9	1147.7	1210.9	1274.6	1338.7	54
55	715.5	776.5	837.8	899.4	961.2	1023.4	1085.9	1148.8	1212.0	1275.7	1339.7	55
56	716.5	777.5	838.8	900.4	962.3	1024.4	1087.0	1149.8	1213.1	1276.7	1340.8	56
57	717.5	778.6	839.9	901.4	963.3	1025.5	1088.0	1150.9	1214.1	1277.8	1341.9	57
58	718.5	779.6	840.9	902.5	964.3	1026.5	1089.0	1151.9	1215.2	1278.8	1342.9	58
59	719.5	780.6	841.9	903.5	965.4	1027.6	1090.1	1153.0	1216.2	1279.9	1344.0	59
M.	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	M.

TABLE XI.

Meridional Parts, or Increased Latitudes.

M.	22°	23°	24°	25°	26°	27°	28°	29°	80°	81°	32°	M.
0	1345.1	1409.7	1474.7	1540.3	1606.4	1673.1	1740.4	1808.3	1876.9	1946.2	2016.2	0
1	1346.2	1410.7	1475.8	1541.4	1607.5	1674.2	1741.5	1809.5	1878.0	1947.4	2017.4	1
2	1347.2	1411.8	1476.9	1542.5	1608.6	1675.3	1742.6	1810.6	1879.2	1948.5	2018.6	2
3	1348.3	1412.9	1478.0	1543.6	1609.7	1676.5	1743.8	1811.7	1880.3	1949.7	2019.7	3
4	1349.4	1414.0	1479.1	1544.7	1610.8	1677.6	1744.9	1812.9	1881.5	1950.8	2020.9	4
5	1350.5	1415.1	1480.2	1545.8	1611.9	1678.7	1746.0	1814.0	1882.6	1952.0	2022.1	5
6	1351.5	1416.2	1481.3	1546.9	1613.1	1679.8	1747.2	1815.1	1883.8	1953.2	2023.3	6
7	1352.6	1417.2	1482.3	1548.0	1614.2	1680.9	1748.3	1816.3	1884.9	1954.3	2024.4	7
8	1353.7	1418.3	1483.4	1549.1	1615.3	1682.0	1749.4	1817.4	1886.1	1955.5	2025.6	8
9	1354.7	1419.4	1484.5	1550.2	1616.4	1683.2	1750.5	1818.6	1887.2	1956.6	2026.8	9
10	1355.8	1420.5	1485.6	1551.3	1617.5	1684.3	1751.7	1819.7	1888.4	1957.8	2028.0	10
11	1356.9	1421.6	1486.7	1552.4	1618.6	1685.4	1752.8	1820.8	1889.6	1959.0	2029.1	11
12	1358.0	1422.6	1487.8	1553.5	1619.7	1686.5	1753.9	1822.0	1890.7	1960.1	2030.3	12
13	1359.0	1423.7	1488.9	1554.6	1620.8	1687.6	1755.1	1823.1	1891.9	1961.3	2031.5	13
14	1360.1	1424.8	1490.0	1555.7	1621.9	1688.7	1756.2	1824.3	1893.0	1962.5	2032.7	14
15	1361.2	1425.9	1491.1	1556.8	1623.0	1689.9	1757.3	1825.4	1894.2	1963.6	2033.9	15
16	1362.3	1427.0	1492.2	1557.9	1624.1	1691.0	1758.4	1826.5	1895.3	1964.8	2035.0	16
17	1363.3	1428.0	1493.3	1559.0	1625.2	1692.1	1759.6	1827.7	1896.5	1966.0	2036.2	17
18	1364.4	1429.1	1494.3	1560.1	1626.4	1693.2	1760.7	1828.8	1897.6	1967.1	2037.4	18
19	1365.5	1430.2	1495.4	1561.2	1627.5	1694.3	1761.8	1830.0	1898.8	1968.3	2038.6	19
20	1366.6	1431.3	1496.5	1562.3	1628.6	1695.5	1763.0	1831.1	1899.9·	1969.5	2039.7	20
21	1367.6	1432.4	1497.6	1563.4	1629.7	1696.6	1764.1	1832.2	1901.1	1970.6	2040.9	21
22	1368.7	1433.5	1498.7	1564.5	1630.8	1697.7	1765.2	1833.4	1902.2	1971.8	2042.1	22
23	1369.8	1434.5	1499.8	1565.6	1631.9	1698.8	1766.3	1834.5	1903.4	1972.9	2043.3	23
24	1370.9	1435.6	1500.9	1566.7	1633.0	1699.9	1767.5	1835.7	1904.5	1974.1	2044.4	24
25	1371.9	1436.7	1502.0	1567.8	1634.1	1701.1	1768.6	1836.8	1905.7	1975.3	2045.6	25
26	1373.0	1437.8	1503.1	1568.9	1635.2	1702.2	1769.7	1838.0	1906.8	1976.4	2046.8	26
27	1374.1	1438.9	1504.2	1570.0	1636.4	1703.3	1770.9	1839.1	1908.0	1977.6	2048.0	27
28	1375.2	1440.0	1505.3	1571.1	1637.5	1704.4	1772.0	1840.2	1909.1	1978.8	2049.2	28
29	1376.2	1441.0	1506.4	1572.2	1638.6	1705.5	1773.1	1841.4	1910.3	1979.9	2050.3	29
30	1377.3	1442.1	1507.4	1573.3	1639.7	1706.7	1774.3	1842.5	1911.5	1981.1	2051.5	30
31	1378.4	1443.2	1508.5	1574.4	1640.8	1707.8	1775.4	1843.7	1912.6	1982.3	2052.7	31
32	1379.5	1444.3	1509.6	1575.5	1641.9	1708.9	1776.5	1844.8	1913.8	1983.4	2053.9	32
33	1380.5	1445.4	1510.7	1576.6	1643.0	1710.0	1777.7	1846.0	1914.9	1984.6	2055.1	33
34	1381.6	1446.5	1511.8	1577.7	1644.1	1711.2	1778.8	1847.1	1916.1	1985.8	2056.2	34
35	1382.7	1447.6	1512.9	1578.8	1645.2	1712.3	1779.9	1848.2	1917.2	1987.0	2057.4	35
36	1383.8	1448.6	1514.0	1579.9	1646.4	1713.4	1781.1	1849.4	1918.4	1988.1	2058.6	36
37	1384.9	1449.7	1515.1	1581.0	1647.5	1714.5	1782.2	1850.5	1919.5	1989.3	2059.8	37
38	1385.9	1450.8	1516.2	1582.1	1648.6	1715.6	1783.3	1851.7	1920.7	1990.5	2061.0	˙38
39	1387.0	1451.9	1517.3	1583.2	1649.7	1716.8	1784.5	1852.8	1921.9	1991.6	2062.2	39
40	1388.1	1453.0	1518.4	1584.3	1650.8	1717.9	1785.6	1854.0	1923.0	1992.8	2063.3	40
41	1389.2	1454.1	1519.5	1585.4	1651.9	1719.0	1786.7	1855.1	1924.2	1994.0	2064.5	41
42	1390.2	1455.2	1520.6	1586.5	1653.0	1720.1	1787.9	1856.3	1925.3	1995.1	2065.7	42
43	1391.3	1456.2	1521.7	1587.6	1654.1	1721.3	1789.0	1857.4	1926.5	1996.3	2066.9	43
44	1392.4	1457.3	1522.8	1588.7	1655.3	1722.4	1790.1	1858.5	1927.6	1997.5	2068.1	44
45	1393.5	1458.4	1523.9	1589.8	1656.4	1723.5	1791.3	1859.7	1928.8	1998.6	2069.3	45
46	1394.6	1459.5	1525.0	1590.9	1657.5	1724.6	1792.4	1860.8	1930.0	1999.8	2070.4	46
47	1395.6	1460.6	1526.0	1592.0	1658.6	1725.8	1793.5	1862.0	1931.1	2001.0	2071.6	47
48	1396.7	1461.7	1527.1	1593.1	1659.7	1726.9	1794.7	1863.1	1932.3	2002.2	2072.8	48
49	1397.8	1462.8	1528.2	1594.3	1660.8	1728.0	1795.8	1864.3	1933.4	2003.3	2074.0	49
50	1398.9	1463.8	1529.3	1595.4	1661.9	1729.1	1796.9	1865.4	1934.6	2004.5	2075.2	50
51	1399.9	1464.9	1530.4	1596.5	1663.1	1730.3	1798.1	1866.6	1935.8	2005.7	2076.4	51
52	1401.0	1466.0	1531.5	1597.6	1664.2	1731.4	1799.2	1867.7	1936.9	2006.8	2077.5	52
53	1402.1	1467.1	1532.6	1598.7	1665.3	1732.5	1800.4	1868.9	1938.1	2008.0	2078.7	53
54	1403.2	1468.2	1533.7	1599.8	1666.4	1733.6	1801.5	1870.0	1939.2	2009.2	2079.9	54
55	1404.3	1469.3	1534.8	1600.9	1667.5	1734.8	1802.6	1871.2	1940.4	2010.4	2081.1	55
56	1405.3	1470.4	1535.9	1602.0	1668.6	1735.9	1803.8	1872.3	1941.6	2011.5	2082.3	56
57	1406.4	1471.5	1537.0	1603.1	1669.8	1737.0	1804.9	1873.5	1942.7	2012.7	2083.5	57
58	1407.5	1472.5	1538.1	1604.2	1670.9	1738.1	1806.0	1874.6	1943.9	2013.9	2084.7	58
59	1408.6	1473.6	1539.2	1605.3	1672.0	1739.3	1807.2	1875.8	1945.0	2015.0	2085.8	59
M.	22°	23°	24°	25°	26°	27°	28°	29°	80°	81°	32°	M.

TABLE XI. 127

Meridional Parts, or Increased Latitudes.

M.	33°	34°	35°	36°	37°	88°	39°	40°	41°	42°	43°	M.
0	2087.0	2158.6	2231.1	2304.5	2378.8	2454.1	2530.5	2607.9	2686.5	2766.3	2847.4	0
1	2088.2	2159.8	2232.3	2305.7	2380.1	2455.4	2531.8	2609.2	2687.9	2767.7	2848.8	1
2	2089.4	2161.0	2233.6	2307.0	2381.3	2456.7	2533.0	2610.5	2689.2	2769.0	2850.2	2
3	2090.6	2162.3	2234.8	2308.2	2382.6	2457.9	2534.3	2611.8	2690.5	2770.4	2851.5	3
4	2091.8	2163.5	2236.0	2309.4	2383.8	2459.2	2535.6	2613.1	2691.8	2771.7	2852.9	4
5	2093.0	2164.7	2237.2	2310.7	2385.1	2460.4	2536.9	2614.4	2693.1	2773.1	2854.3	5
6	2094.2	2165.9	2238.4	2311.9	2386.3	2461.7	2538.2	2615.7	2694.5	2774.4	2855.6	6
7	2095.3	2167.1	2239.6	2313.1	2387.6	2463.0	2539.5	2617.0	2695.8	2775.7	2857.0	7
8	2096.5	2168.3	2240.9	2314.4	2388.8	2464.2	2540.7	2618.3	2697.1	2777.1	2858.3	8
9	2097.7	2169.5	2242.1	2315.6	2390.0	2465.5	2542.0	2619.6	2698.4	2778.4	2859.7	9
10	2098.9	2170.7	2243.3	2316.8	2391.3	2466.8	2543.3	2621.0	2699.8	2779.8	2861.1	10
11	2100.1	2171.9	2244.5	2318.1	2392.5	2468.0	2544.6	2622.3	2701.1	2781.1	2862.4	11
12	2101.3	2173.1	2245.7	2319.3	2393.8	2469.3	2545.9	2623.6	2702.4	2782.5	2863.8	12
13	2102.5	2174.3	2246.9	2320.5	2395.0	2470.6	2547.2	2624.9	2703.7	2783.8	2865.2	13
14	2103.7	2175.5	2248.2	2321.8	2396.3	2471.8	2548.5	2626.2	2705.0	2785.2	2866.5	14
15	2104.9	2176.7	2249.4	2323.0	2397.5	2473.1	2549.7	2627.5	2706.4	2786.5	2867.9	15
16	2106.0	2177.9	2250.6	2324.2	2398.8	2474.4	2551.0	2628.8	2707.7	2787.8	2869.3	16
17	2107.2	2179.1	2251.8	2325.5	2400.1	2475.7	2552.3	2630.1	2709.0	2789.2	2870.7	17
18	2108.4	2180.3	2253.0	2326.7	2401.3	2476.9	2553.6	2631.4	2710.4	2790.5	2872.0	18
19	2109.6	2181.5	2254.3	2327.9	2402.6	2478.2	2554.9	2632.7	2711.7	2791.9	2873.4	19
20	2110.8	2182.7	2255.5	2329.2	2403.8	2479.5	2556.2	2634.0	2713.0	2793.2	2874.8	20
21	2112.0	2183.9	2256.7	2330.4	2405.1	2480.7	2557.5	2635.3	2714.3	2794.6	2876.1	21
22	2113.2	2185.1	2257.9	2331.6	2406.3	2482.0	2558.8	2636.6	2715.7	2795.9	2877.5	22
23	2114.4	2186.3	2259.1	2332.9	2407.6	2483.3	2560.0	2637.9	2717.0	2797.3	2878.9	23
24	2115.6	2187.5	2260.4	2334.1	2408.8	2484.5	2561.3	2639.2	2718.3	2798.6	2880.2	24
25	2116.8	2188.7	2261.6	2335.3	2410.1	2485.8	2562.6	2640.5	2719.6	2800.0	2881.6	25
26	2118.0	2189.9	2262.8	2336.6	2411.3	2487.1	2563.9	2641.8	2721.0	2801.3	2883.0	26
27	2119.2	2191.2	2264.0	2337.8	2412.6	2488.4	2565.2	2643.2	2722.3	2802.7	2884.4	27
28	2120.3	2192.4	2265.2	2339.1	2413.8	2489.6	2566.5	2644.5	2723.6	2804.0	2885.7	28
29	2121.5	2193.6	2266.5	2340.3	2415.1	2490.9	2567.8	2645.8	2725.0	2805.4	2887.1	29
30	2122.7	2194.8	2267.7	2341.5	2416.3	2492.2	2569.1	2647.1	2726.3	2806.7	2888.5	30
31	2123.9	2196.0	2268.9	2342.8	2417.6	2493.4	2570.4	2648.4	2727.6	2808.1	2889.9	31
32	2125.1	2197.2	2270.1	2344.0	2418.9	2494.7	2571.6	2649.7	2728.9	2809.4	2891.2	32
33	2126.3	2198.4	2271.4	2345.3	2420.1	2496.0	2572.9	2651.0	2730.3	2810.8	2892.6	33
34	2127.5	2199.6	2272.6	2346.5	2421.4	2497.3	2574.2	2652.3	2731.6	2812.1	2894.0	34
35	2128.7	2200.8	2273.8	2347.7	2422.6	2498.5	2575.5	2653.6	2732.9	2813.5	2895.4	35
36	2129.9	2202.0	2275.0	2349.0	2423.9	2499.8	2576.8	2655.0	2734.3	2814.8	2896.7	36
37	2131.1	2203.2	2276.3	2350.2	2425.1	2501.1	2578.1	2656.3	2735.6	2816.2	2898.1	37
38	2132.3	2204.4	2277.5	2351.5	2426.4	2502.4	2579.4	2657.6	2736.9	2817.6	2899.5	38
39	2133.5	2205.7	2278.7	2352.7	2427.7	2503.6	2580.7	2658.9	2738.3	2818.9	2900.9	39
40	2134.7	2206.9	2279.9	2353.9	2428.9	2504.9	2582.0	2660.2	2739.6	2820.3	2902.2	40
41	2135.9	2208.1	2281.2	2355.2	2430.2	2506.2	2583.3	2661.5	2740.9	2821.6	2903.6	41
42	2137.1	2209.3	2282.4	2356.4	2431.4	2507.5	2584.6	2662.8	2742.3	2823.0	2905.0	42
43	2138.3	2210.5	2283.6	2357.7	2432.7	2508.7	2585.9	2664.1	2743.6	2824.3	2906.4	43
44	2139.5	2211.7	2284.8	2358.9	2433.9	2510.0	2587.2	2665.5	2744.9	2825.7	2907.7	44
45	2140.7	2212.9	2286.1	2360.1	2435.2	2511.3	2588.5	2666.8	2746.3	2827.0	2909.1	45
46	2141.9	2214.1	2287.3	2361.4	2436.5	2512.6	2589.8	2668.1	2747.6	2828.4	2910.5	46
47	2143.1	2215.3	2288.5	2362.6	2437.7	2513.8	2591.1	2669.4	2748.9	2829.8	2911.9	47
48	2144.3	2216.6	2289.7	2363.9	2439.0	2515.1	2592.4	2670.7	2750.3	2831.1	2913.3	48
49	2145.5	2217.8	2291.0	2365.1	2440.2	2516.4	2593.6	2672.0	2751.6	2832.5	2914.6	49
50	2146.7	2219.0	2292.2	2366.4	2441.5	2517.7	2594.9	2673.4	2753.0	2833.8	2916.0	50
51	2147.8	2220.2	2293.4	2367.6	2442.8	2519.0	2596.2	2674.7	2754.3	2835.2	2917.4	51
52	2149.0	2221.4	2294.7	2368.9	2444.0	2520.2	2597.5	2676.0	2755.6	2836.5	2918.8	52
53	2150.2	2222.6	2295.9	2370.1	2445.3	2521.5	2598.8	2677.3	2757.0	2837.9	2920.2	53
54	2151.4	2223.8	2297.1	2371.3	2446.6	2522.8	2600.1	2678.6	2758.3	2839.3	2921.6	54
55	2152.6	2225.0	2298.3	2372.6	2447.8	2524.1	2601.4	2679.9	2759.6	2840.6	2922.9	55
56	2153.8	2226.3	2299.6	2373.8	2449.1	2525.4	2602.7	2681.3	2761.0	2842.0	2924.3	56
57	2155.0	2227.5	2300.8	2375.1	2450.3	2526.6	2604.0	2682.6	2762.3	2843.3	2925.7	57
58	2156.2	2228.7	2302.0	2376.3	2451.6	2527.9	2605.3	2683.9	2763.7	2844.7	2927.1	58
59	2157.4	2229.9	2303.3	2377.6	2452.9	2529.2	2606.6	2685.2	2765.0	2846.1	2928.5	59
M.	33°	34°	35°	36°	37°	38°	39°	40°	41°	42°	43°	M.

TABLE XI.

Meridional Parts, or Increased Latitudes.

M.	44°	45°	46°	47°	48°	49°	50°	51°	52°	53°	54°	M.
0	2929.9	3013.7	3099.0	3185.9	3274.5	3364.7	3456.9	3551.0	3647.1	3745.4	3846.1	0
1	2931.2	3015.1	3100.5	3187.4	3276.0	3366.3	3458.4	3552.5	3648.7	3747.1	3847.7	1
2	2932.6	3016.5	3101.9	3188.8	3277.4	3367.8	3460.0	3554.1	3650.3	3748.7	3849.4	2
3	2934.0	3017.9	3103.3	3190.3	3278.9	3369.3	3461.5	3555.7	3652.0	3750.4	3851.1	3
4	2935.4	3019.3	3104.8	3191.8	3280.4	3370.8	3463.1	3557.3	3653.6	3752.1	3852.8	4
5	2936.8	3020.8	3106.2	3193.2	3281.9	3372.4	3464.6	3558.9	3655.2	3753.7	3854.5	5
6	2938.2	3022.2	3107.6	3194.7	3283.4	3373.9	3466.2	3560.5	3656.8	3755.4	3856.2	6
7	2939.6	3023.6	3109.1	3196.2	3284.9	3375.4	3467.8	3562.1	3658.4	3757.0	3858.0	7
8	2941.0	3025.0	3110.5	3197.6	3286.4	3376.9	3469.3	3563.7	3660.1	3758.7	3859.7	8
9	2942.3	3026.4	3112.0	3199.1	3287.9	3378.4	3470.9	3565.2	3661.7	3760.4	3861.4	9
10	2943.7	3027.8	3113.4	3200.6	3289.4	3380.0	3472.4	3566.8	3663.3	3762.0	3863.1	10
11	2945.1	3029.2	3114.8	3202.0	3290.9	3381.5	3474.0	3568.4	3665.0	3763.7	3864.8	11
12	2946.5	3030.6	3116.3	3203.5	3292.4	3383.0	3475.5	3569.0	3666.6	3765.4	3866.5	12
13	2947.9	3032.1	3117.7	3205.0	3293.9	3384.6	3477.1	3571.6	3668.2	3767.0	3868.2	13
14	2949.3	3033.5	3119.2	3206.4	3295.4	3386.1	3478.7	3573.2	3669.8	3768.7	3869.9	14
15	2950.7	3034.9	3120.6	3207.9	3296.9	3387.6	3480.2	3574.8	3671.5	3770.4	3871.6	15
16	2952.1	3036.3	3122.0	3209.4	3298.4	3389.1	3481.8	3576.4	3673.1	3772.0	3873.3	16
17	2953.5	3037.7	3123.5	3210.8	3299.9	3390.7	3483.3	3578.0	3674.7	3773.7	3875.0	17
18	2954.9	3039.1	3124.9	3212.3	3301.4	3392.2	3484.9	3579.6	3676.4	3775.4	3876.7	18
19	2956.3	3040.6	3126.4	3213.8	3302.9	3393.7	3486.5	3581.2	3678.0	3777.0	3878.4	19
20	2957.6	3042.0	3127.8	3215.2	3304.4	3395.2	3488.0	3582.8	3679.6	3778.7	3880.1	20
21	2959.0	3043.4	3129.3	3216.7	3305.9	3396.8	3489.6	3584.4	3681.3	3780.4	3881.8	21
22	2960.4	3044.8	3130.7	3218.2	3307.4	3398.3	3491.1	3586.0	3682.9	3782.0	3883.6	22
23	2961.8	3046.2	3132.1	3219.7	3308.9	3399.8	3492.7	3587.6	3684.5	3783.7	3885.3	23
24	2963.2	3047.6	3133.6	3221.1	3310.4	3401.4	3494.3	3589.2	3686.2	3785.4	3887.0	24
25	2964.6	3049.1	3135.0	3222.6	3311.9	3402.9	3495.8	3590.8	3687.8	3787.1	3888.7	25
26	2966.0	3050.5	3136.5	3224.1	3313.4	3404.4	3497.4	3592.4	3689.4	3788.7	3890.4	26
27	2967.4	3051.9	3137.9	3225.6	3314.9	3406.0	3499.0	3594.0	3691.1	3790.4	3892.1	27
28	2968.8	3053.3	3139.4	3227.0	3316.4	3407.5	3500.5	3595.6	3692.7	3792.1	3893.8	28
29	2970.2	3054.8	3140.8	3228.5	3317.9	3409.0	3502.1	3597.2	3694.3	3793.8	3895.6	29
30	2971.6	3056.2	3142.3	3230.0	3319.4	3410.6	3503.7	3598.8	3696.0	3795.4	3897.3	30
31	2973.0	3057.6	3143.7	3231.5	3320.9	3412.1	3505.2	3600.4	3697.6	3797.1	3899.0	31
32	2974.4	3059.0	3145.2	3232.9	3322.4	3413.6	3506.8	3602.0	3699.3	3798.8	3900.7	32
33	2975.8	3060.4	3146.6	3234.4	3323.9	3415.2	3508.4	3603.6	3700.9	3800.5	3902.4	33
34	2977.2	3061.9	3148.1	3235.9	3325.4	3416.7	3509.9	3605.2	3702.5	3802.1	3904.2	34
35	2978.6	3063.3	3149.5	3237.4	3326.9	3418.3	3511.5	3606.8	3704.2	3803.8	3905.9	35
36	2980.0	3064.7	3151.0	3238.8	3328.4	3419.8	3513.1	3608.4	3705.8	3805.5	3907.6	36
37	2981.4	3066.1	3152.4	3240.3	3329.9	3421.3	3514.7	3610.0	3707.5	3807.2	3909.3	37
38	2982.8	3067.6	3153.9	3241.8	3331.4	3422.9	3516.2	3611.6	3709.1	3808.9	3911.1	38
39	2984.2	3069.0	3155.3	3243.3	3332.9	3424.4	3517.8	3613.2	3710.7	3810.6	3912.8	39
40	2985.6	3070.4	3156.8	3244.8	3334.5	3426.0	3519.4	3614.8	3712.4	3812.2	3914.5	40
41	2987.0	3071.8	3158.2	3246.2	3336.0	3427.5	3520.9	3616.4	3714.0	3813.9	3916.2	41
42	2988.4	3073.3	3159.7	3247.7	3337.5	3429.0	3522.5	3618.0	3715.7	3815.6	3918.0	42
43	2989.8	3074.7	3161.1	3249.2	3339.0	3430.6	3524.1	3619.6	3717.3	3817.3	3919.7	43
44	2991.2	3076.1	3162.6	3250.7	3340.5	3432.1	3525.7	3621.2	3719.0	3819.0	3921.4	44
45	2992.6	3077.6	3164.0	3252.2	3342.0	3433.7	3527.2	3622.9	3720.6	3820.7	3923.1	45
46	2994.0	3079.0	3165.5	3253.6	3343.5	3435.2	3528.8	3624.5	3722.3	3822.4	3924.9	46
47	2995.4	3080.4	3167.0	3255.1	3345.0	3436.8	3530.4	3626.1	3723.9	3824.0	3926.6	47
48	2996.8	3081.8	3168.4	3256.6	3346.5	3438.3	3532.0	3627.7	3725.6	3825.7	3928.3	48
49	2998.2	3083.3	3169.9	3258.1	3348.1	3439.8	3533.6	3629.3	3727.2	3827.4	3930.1	49
50	2999.6	3084.7	3171.3	3259.6	3349.6	3441.4	3535.1	3630.9	3728.9	3829.1	3931.8	50
51	3001.0	3086.1	3172.8	3261.1	3351.1	3442.9	3536.7	3632.5	3730.5	3830.8	3933.5	51
52	3002.4	3087.6	3174.2	3262.6	3352.6	3444.5	3538.3	3634.2	3732.2	3832.5	3935.3	52
53	3003.8	3089.0	3175.7	3264.0	3354.1	3446.0	3539.9	3635.8	3733.8	3834.2	3937.0	53
54	3005.3	3090.4	3177.2	3265.5	3355.6	3447.6	3541.5	3637.4	3735.5	3835.9	3938.7	54
55	3006.7	3091.9	3178.6	3267.0	3357.2	3449.1	3543.0	3639.0	3737.1	3837.6	3940.5	55
56	3008.1	3093.3	3180.1	3268.5	3358.7	3450.7	3544.6	3640.6	3738.8	3839.3	3942.2	56
57	3009.5	3094.7	3181.5	3270.0	3360.2	3452.2	3546.2	3642.2	3740.4	3841.0	3943.9	57
58	3010.9	3096.2	3183.0	3271.5	3361.7	3453.8	3547.8	3643.9	3742.1	3842.7	3945.7	58
59	3012.3	3097.6	3184.5	3273.0	3363.2	3455.3	3549.4	3645.5	3743.8	3844.4	3947.4	59
M.	44°	45°	46°	47°	48°	49°	50°	51°	52°	53°	54°	M.

TABLE XI. 129

Meridional Parts, or Increased Latitudes.

M.	55°	56°	57°	58°	59°	60°	61°	62°	63°	64°	65°	M.
0	3949.1	4054.9	4163.4	4274.8	4389.4	4507.5	4629.1	4754.7	4884.5	5018.8	5158.0	**0**
1	3950.9	4056.6	4165.2	4276.7	4391.4	4509.5	4631.2	4756.8	4886.7	5021.0	5160.3	1
2	3952.6	4058.4	4167.0	4278.6	4393.3	4511.5	4633.2	4758.9	4888.9	5023.3	5162.7	2
3	3954.4	4060.2	4168.9	4280.5	4395.3	4513.5	4635.3	4761.1	4891.1	5025.6	5165.1	3
4	3956.1	4062.0	4170.7	4282.4	4397.2	4515.5	4637.4	4763.2	4893.3	5027.9	5167.4	4
5	3957.9	4063.8	4172.5	4284.2	4399.1	4517.5	4639.4	4765.3	4895.5	5030.2	5169.8	**5**
6	3959.6	4065.6	4174.4	4286.1	4401.1	4519.5	4641.5	4767.5	4897.7	5032.5	5172.2	6
7	3961.3	4067.4	4176.2	4288.0	4403.0	4521.5	4643.6	4769.6	4899.9	5034.7	5174.6	7
8	3963.1	4069.2	4178.0	4289.9	4405.0	4523.5	4645.6	4771.7	4902.1	5037.0	5176.9	8
9	3964.8	4070.9	4179.9	4291.8	4406.9	4525.5	4647.7	4773.9	4904.3	5039.3	5179.3	9
10	3966.6	4072.7	4181.7	4293.7	4408.9	4527.5	4649.8	4776.0	4906.5	5041.6	5181.7	**10**
11	3968.3	4074.5	4183.6	4295.6	4410.8	4529.5	4651.8	4778.2	4908.7	5043.9	5184.1	11
12	3970.1	4076.3	4185.4	4297.5	4412.8	4531.5	4653.9	4780.3	4910.9	5046.2	5186.4	12
13	3971.8	4078.1	4187.2	4299.4	4414.7	4533.5	4656.0	4782.4	4913.2	5048.5	5188.8	13
14	3973.6	4079.9	4189.1	4301.3	4416.7	4535.5	4658.1	4784.6	4915.4	5050.8	5191.2	14
15	3975.3	4081.7	4190.9	4303.2	4418.6	4537.5	4660.1	4786.7	4917.6	5053.1	5193.6	**15**
16	3977.1	4083.5	4192.8	4305.1	4420.6	4539.5	4662.2	4788.9	4919.8	5055.4	5196.0	16
17	3978.8	4085.3	4194.6	4307.0	4422.5	4541.6	4664.3	4791.0	4922.0	5057.7	5198.4	17
18	3980.6	4087.1	4196.5	4308.9	4424.5	4543.6	4666.4	4793.2	4924.3	5060.0	5200.8	18
19	3982.3	4088.9	4198.3	4310.8	4426.4	4545.6	4668.5	4795.3	4926.6	5062.3	5203.2	19
20	3984.1	4090.7	4200.2	4312.7	4428.4	4547.6	4670.5	4797.5	4928.7	5064.6	5205.5	**20**
21	3985.8	4092.5	4202.0	4314.6	4430.4	4549.6	4672.6	4799.6	4930.9	5066.9	5207.9	21
22	3987.6	4094.3	4203.9	4316.5	4432.3	4551.6	4674.7	4801.8	4933.2	5069.2	5210.3	22
23	3989.4	4096.1	4205.7	4318.4	4434.3	4553.7	4676.8	4803.9	4935.4	5071.5	5212.7	23
24	3991.1	4097.9	4207.6	4320.3	4436.2	4555.7	4678.9	4806.1	4937.6	5073.8	5215.1	24
25	3992.9	4099.7	4209.4	4322.2	4438.2	4557.7	4681.0	4808.2	4939.8	5076.2	5217.5	**25**
26	3994.6	4101.5	4211.3	4324.1	4440.2	4559.7	4683.0	4810.3	4942.1	5078.5	5219.9	26
27	3996.4	4193.3	4213.1	4326.0	4442.1	4561.8	4685.1	4812.5	4944.3	5080.8	5222.3	27
28	3998.1	4105.1	4215.0	4327.9	4444.1	4563.8	4687.2	4814.7	4946.6	5083.1	5224.7	28
29	3999.9	4106.9	4216.8	4329.8	4446.1	4565.8	4689.3	4816.9	4948.8	5085.4	5227.1	29
30	4001.7	4108.7	4218.7	4331.7	4448.0	4567.8	4691.4	4819.0	4951.0	5087.7	5229.6	**30**
31	4003.4	4110.6	4220.6	4333.6	4450.0	4569.9	4693.5	4821.2	4953.3	5090.1	5232.0	31
32	4005.2	4112.4	4222.4	4335.5	4452.0	4571.9	4695.6	4823.4	4955.5	5092.4	5234.4	32
33	4007.0	4114.2	4224.3	4337.5	4453.9	4573.9	4697.7	4825.5	4957.7	5094.7	5236.8	33
34	4008.7	4116.0	4226.1	4339.4	4455.9	4575.9	4699.8	4827.7	4960.0	5097.0	5239.2	34
35	4010.5	4117.8	4228.0	4341.3	4457.9	4578.0	4701.9	4829.9	4962.2	5099.4	5241.6	**35**
36	4012.3	4119.6	4229.9	4343.2	4459.8	4580.0	4704.0	4832.0	4964.5	5101.7	5244.0	36
37	4014.0	4121.4	4231.7	4345.1	4461.8	4582.0	4706.1	4834.2	4966.7	5104.0	5246.5	37
38	4015.8	4123.2	4233.6	4347.0	4463.8	4584.1	4708.2	4836.4	4969.0	5106.3	5248.9	38
39	4017.6	4125.1	4235.5	4348.9	4465.8	4586.1	4710.3	4838.5	4971.2	5108.7	5251.3	39
40	4019.3	4126.9	4237.3	4350.9	4467.7	4588.2	4712.4	4840.7	4973.5	5111.0	5253.7	**40**
41	4021.1	4128.7	4239.2	4352.8	4469.7	4590.2	4714.5	4842.9	4975.7	5113.3	5256.1	41
42	4022.9	4130.5	4241.1	4354.7	4471.7	4592.2	4716.6	4845.1	4978.0	5115.7	5258.6	42
43	4024.6	4132.3	4242.9	4356.6	4473.7	4594.3	4718.7	4847.2	4980.2	5118.0	5261.0	43
44	4026.4	4134.1	4244.8	4358.6	4475.6	4596.3	4720.8	4849.4	4982.5	5120.4	5263.4	44
45	4028.2	4136.0	4246.7	4360.5	4477.6	4598.4	4722.9	4851.6	4984.7	5122.7	5265.9	**45**
46	4030.0	4137.8	4248.5	4362.4	4479.6	4600.4	4725.0	4853.8	4987.0	5125.0	5268.3	46
47	4031.7	4139.6	4250.4	4364.3	4481.6	4602.4	4727.1	4856.0	4989.3	5127.4	5270.7	47
48	4033.5	4141.4	4252.3	4366.3	4483.6	4604.5	4729.3	4858.2	4991.5	5129.7	5273.2	48
49	4035.3	4143.2	4254.1	4368.2	4485.6	4606.5	4731.4	4860.3	4993.8	5132.1	5275.6	49
50	4037.1	4145.1	4256.0	4370.1	4487.6	4608.6	4733.5	4862.5	4996.1	5134.4	5278.0	**50**
51	4038.8	4146.9	4257.9	4372.0	4489.5	4610.6	4735.6	4864.7	4998.3	5136.8	5280.5	51
52	4040.6	4148.7	4259.8	4374.0	4491.5	4612.7	4737.7	4866.9	5000.6	5139.1	5282.9	52
53	4042.4	4150.5	4261.6	4375.9	4493.5	4614.7	4739.8	4869.1	5002.9	5141.5	5285.4	53
54	4044.2	4152.4	4263.5	4377.8	4495.5	4616.8	4742.0	4871.3	5005.1	5143.8	5287.8	54
55	4045.9	4154.2	4265.4	4379.8	4497.5	4618.8	4744.1	4873.5	5007.4	5146.2	5290.3	**55**
56	4047.7	4156.0	4267.3	4381.7	4499.5	4620.9	4746.2	4875.7	5009.7	5148.5	5292.7	56
57	4049.5	4157.9	4269.2	4383.6	4501.5	4623.0	4748.3	4877.9	5011.9	5150.9	5295.1	57
58	4051.3	4159.7	4271.0	4385.6	4503.5	4625.0	4750.4	4880.1	5014.2	5153.3	5297.6	58
59	4053.1	4161.5	4272.9	4387.5	4505.5	4627.1	4752.6	4882.3	5016.5	5155.6	5300.1	59
M.	**55°**	**56°**	**57°**	**58°**	**59°**	**60°**	**61°**	**62°**	**63°**	**64°**	**65°**	**M.**

TABLE XI.

Meridional Parts, or Increased Latitudes.

M.	66°	67°	68°	69°	70°	71°	72°	73°	74°	75°	M.
0	5302.5	5452.8	5609.5	5773.1	5944.3	6124.0	6313.0	6512.4	6723.6	6948.1	0
1	5305.0	5455.4	5612.2	5775.9	5947.2	6127.0	6316.2	6515.9	6727.3	6952.0	1
2	5307.4	5458.0	5614.8	5778.7	5950.2	6130.1	6319.5	6519.3	6730.9	6955.9	2
3	5309.9	5460.5	5617.5	5781.5	5953.1	6133.2	6322.7	6522.7	6734.5	6959.7	3
4	5312.4	5463.1	5620.2	5784.3	5956.0	6136.3	6325.9	6526.1	6738.2	6963.6	4
5	5314.8	5465.7	5622.9	5787.1	5959.0	6139.3	6329.2	6529.6	6741.8	6967.5	5
6	5317.3	5468.2	5625.5	5789.9	5961.9	6142.4	6332.4	6533.0	6745.5	6971.4	6
7	5319.7	5470.8	5628.2	5792.7	5964.8	6145.5	6335.7	6536.4	6749.1	6975.3	7
8	5322.2	5473.4	5630.9	5795.5	5967.8	6148.6	6338.9	6539.9	6752.8	6979.2	8
9	5324.7	5475.9	5633.6	5798.3	5970.7	6151.7	6342.2	6543.3	6756.4	6983.1	9
10	5327.2	5478.5	5636.3	5801.1	5973.7	6154.8	6345.5	6546.8	6760.1	6987.0	10
11	5329.6	5481.1	5639.0	5803.9	5976.6	6157.9	6348.7	6550.2	6763.8	6990.9	11
12	5332.1	5483.7	5641.7	5806.7	5979.5	6161.0	6352.0	6553.7	6767.4	6994.8	12
13	5334.6	5486.2	5644.3	5809.5	5982.5	6164.1	6355.3	6557.2	6771.1	6998.7	13
14	5337.1	5488.8	5647.0	5812.3	5985.5	6167.2	6358.5	6560.6	6774.8	7002.6	14
15	5339.4	5491.4	5649.7	5815.2	5988.4	6170.3	6361.8	6564.1	6778.5	7006.5	15
16	5342.0	5494.0	5652.4	5818.0	5991.4	6173.4	6365.1	6567.6	6782.1	7010.5	16
17	5344.5	5496.6	5655.1	5820.8	5994.3	6176.5	6368.4	6571.0	6785.8	7014.4	17
18	5347.0	5499.2	5657.8	5823.6	5997.3	6179.6	6371.7	6574.5	6789.5	7018.3	18
19	5349.5	5501.7	5660.5	5826.5	6000.3	6182.8	6375.0	6578.0	6793.2	7022.3	19
20	5352.0	5504.3	5663.2	5829.3	6003.2	6185.9	6378.2	6581.5	6796.9	7026.2	20
21	5354.4	5506.9	5665.9	5832.1	6006.2	6189.0	6381.5	6585.0	6800.6	7030.2	21
22	5356.9	5509.5	5668.7	5835.0	6009.2	6192.1	6384.8	6588.4	6804.3	7034.1	22
23	5359.4	5512.1	5671.4	5837.8	6012.1	6195.3	6388.1	6591.9	6808.0	7038.1	23
24	5361.9	5514.7	5674.1	5840.6	6015.1	6198.4	6391.4	6595.4	6811.7	7042.1	24
25	5364.4	5517.3	5676.8	5843.5	6018.1	6201.5	6394.7	6598.9	6815.6	7046.0	25
26	5366.9	5519.9	5679.5	5846.3	6021.1	6204.7	6398.1	6602.4	6819.2	7050.0	26
27	5369.4	5522.5	5682.2	5849.2	6024.1	6207.8	6401.4	6605.9	6822.9	7054.0	27
28	5371.9	5525.1	5684.9	5852.0	6027.1	6210.9	6404.7	6609.5	6826.6	7057.9	28
29	5374.4	5527.7	5687.7	5854.9	6030.0	6214.1	6408.0	6613.0	6830.4	7061.9	29
30	5376.9	5530.4	5690.4	5857.7	6033.0	6217.2	6411.3	6616.5	6834.1	7065.9	30
31	5379.4	5533.0	5693.1	5860.6	6036.0	6220.4	6414.7	6620.0	6837.9	7069.9	31
32	5381.9	5535.6	5695.9	5863.4	6039.0	6223.5	6418.0	6623.5	6841.6	7073.9	32
33	5384.5	5538.2	5698.6	5866.3	6042.0	6226.7	6421.3	6627.1	6845.4	7077.9	33
34	5387.0	5540.8	5701.3	5869.1	6045.0	6229.9	6424.6	6630.6	6849.1	7081.9	34
35	5389.5	5543.4	5704.1	5872.0	6048.0	6233.0	6428.0	6634.1	6852.9	7085.9	35
36	5392.0	5546.0	5706.8	5874.9	6051.0	6236.2	6431.3	6637.7	6856.6	7090.0	36
37	5394.5	5548.7	5709.5	5877.7	6054.1	6239.4	6434.7	6641.2	6860.4	7094.0	37
38	5397.0	5551.3	5712.3	5880.6	6057.1	6242.5	6438.0	6644.7	6864.2	7098.0	38
39	5399.5	5553.9	5715.0	5883.5	6060.1	6245.7	6441.4	6648.3	6867.9	7102.0	39
40	5402.1	5556.6	5717.8	5886.4	6063.1	6248.9	6444.7	6651.9	6871.7	7106.1	40
41	5404.6	5559.2	5720.5	5889.2	6066.1	6252.1	6448.1	6655.4	6875.5	7110.1	41
42	5407.1	5561.8	5723.2	5892.1	6069.1	6255.2	6451.4	6659.0	6879.3	7114.2	42
43	5409.6	5564.4	5726.0	5895.0	6072.2	6258.4	6454.8	6662.5	6883.1	7118.2	43
44	5412.2	5567.1	5728.8	5897.9	6075.2	6261.6	6458.2	6666.1	6886.9	7122.3	44
45	5414.7	5569.7	5731.5	5900.8	6078.2	6264.8	6461.5	6669.7	6890.7	7126.3	45
46	5417.2	5572.4	5734.3	5903.6	6081.2	6268.0	6464.9	6673.2	6894.5	7130.4	46
47	5419.8	5575.0	5737.0	5906.5	6084.3	6271.2	6468.3	6676.8	6898.3	7134.5	47
48	5422.3	5577.6	5739.8	5909.4	6087.3	6274.4	6471.7	6680.4	6902.1	7138.5	48
49	5424.8	5580.3	5742.6	5912.3	6090.4	6277.6	6475.0	6684.0	6905.9	7142.6	49
50	5427.4	5582.9	5745.3	5915.2	6093.4	6280.8	6478.4	6687.6	6909.7	7146.7	50
51	5429.9	5585.6	5748.1	5918.1	6096.4	6284.0	6481.8	6691.2	6913.5	7150.8	51
52	5432.5	5588.2	5750.9	5921.0	6099.5	6287.2	6485.2	6694.8	6917.4	7154.9	52
53	5435.0	5590.9	5753.6	5923.9	6102.5	6290.4	6488.6	6698.4	6921.2	7159.0	53
54	5437.5	5593.5	5756.4	5926.8	6105.6	6293.6	6492.0	6702.0	6925.0	7163.1	54
55	5440.1	5596.2	5759.2	5929.7	6108.7	6296.8	6495.4	6705.6	6928.9	7167.2	55
56	5442.6	5598.9	5762.0	5932.7	6111.7	6300.1	6498.8	6709.2	6932.7	7171.3	56
57	5445.2	5601.5	5764.7	5935.6	6114.8	6303.3	6502.2	6712.8	6936.6	7175.4	57
58	5447.7	5604.2	5767.5	5938.5	6117.8	6306.5	6505.6	6716.4	6940.4	7179.5	58
59	5450.3	5606.8	5770.3	5941.4	6120.9	6309.7	6509.0	6720.0	6944.3	7183.6	59
M.	66°	67°	68°	69°	70°	71°	72°	73°	74°	75°	M.

TABLE XI.

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Meridional Parts, or Increased Latitudes.

M.	76°	77°	78°	79°	80°	81°	82°	83°	84°	85°	M.
0	7187.8	7444.8	7722.1	8023.1	8352.6	8716.4	9122.7	9583.0	10114.0	10741.7	0
1	7191.9	7449.3	7726.9	8028.4	8358.3	8722.8	9129.9	9591.2	10123.6	10753.2	1
2	7196.0	7453.7	7731.7	8033.6	8364.1	8729.2	9137.1	9599.4	10133.2	10764.7	2
3	7200.2	7458.2	7736.5	8038.9	8369.9	8735.6	9144.3	9607.7	10142.8	10776.3	3
4	7204.3	7462.6	7741.4	8044.2	8375.7	8742.0	9151.5	9616.0	10152.5	10787.9	4
5	7208.5	7467.1	7746.2	8049.4	8381.5	8748.5	9158.8	9624.3	10162.2	10799.6	5
6	7212.6	7471.6	7751.0	8054.7	8387.3	8754.9	9166.1	9632.6	10171.9	10811.3	6
7	7216.8	7476.1	7755.9	8060.0	8393.1	8761.4	9173.3	9640.9	10181.6	10823.0	7
8	7221.0	7480.5	7760.8	8065.3	8398.9	8767.9	9180.6	9649.3	10191.4	10834.7	8
9	7225.1	7485.0	7765.6	8070.6	8404.8	8774.4	9188.0	9657.6	10201.2	10846.6	9
10	7229.3	7489.5	7770.5	8075.9	8410.6	8780.9	9195.3	9666.0	10211.0	10858.4	10
11	7233.5	7494.0	7775.4	8081.1	8416.5	8787.4	9202.6	9674.5	10220.9	10870.3	11
12	7237.7	7498.5	7780.3	8086.6	8422.3	8793.9	9210.0	9682.9	10230.8	10882.2	12
13	7241.9	7503.1	7785.1	8091.9	8428.2	8800.5	9217.4	9691.3	10240.7	10894.2	13
14	7246.1	7507.6	7790.0	8097.3	8434.1	8807.0	9224.8	9699.8	10250.6	10906.2	14
15	7250.3	7512.1	7795.0	8102.6	8440.0	8813.6	9232.2	9708.3	10260.6	10918.3	15
16	7254.5	7516.6	7799.9	8108.0	8445.9	8820.2	9239.6	9716.8	10270.6	10930.4	16
17	7258.7	7521.2	7804.8	8113.4	8451.8	8826.7	9247.0	9725.4	10280.6	10942.5	17
18	7262.9	7525.7	7809.7	8118.7	8457.8	8833.3	9254.5	9733.9	10290.6	10954.7	18
19	7267.2	7530.3	7814.6	8124.1	8463.7	8840.0	9262.0	9742.5	10300.7	10966.9	19
20	7271.4	7534.8	7819.6	8129.5	8469.7	8846.6	9269.4	9751.1	10310.8	10979.2	20
21	7275.6	7539.4	7824.5	8134.9	8475.6	8853.2	9276.9	9759.7	10321.0	10991.5	21
22	7279.9	7544.0	7829.5	8140.4	8481.6	8859.9	9284.5	9768.4	10331.2	11003.8	22
23	7284.1	7548.5	7834.4	8145.8	8487.6	8866.6	9292.0	9777.0	10341.4	11016.2	23
24	7288.3	7553.1	7839.4	8151.2	8493.6	8873.2	9299.5	9785.7	10351.6	11028.7	24
25	7292.6	7557.7	7844.4	8156.6	8499.6	8879.9	9307.1	9794.4	10361.8	11041.2	25
26	7296.9	7562.3	7849.4	8162.1	8505.6	8886.6	9314.7	9803.2	10372.1	11053.7	26
27	7301.1	7566.9	7854.4	8167.6	8511.6	8893.4	9322.3	9811.9	10382.5	11066.3	27
28	7305.4	7571.5	7859.4	8173.0	8517.6	8900.1	9329.9	9820.7	10392.8	11078.9	28
29	7309.7	7576.1	7864.4	8178.5	8523.7	8906.9	9337.6	9829.5	10403.2	11091.6	29
30	7313.9	7580.7	7869.4	8184.0	8529.7	8913.6	9345.2	9838.3	10413.6	11104.3	30
31	7318.2	7585.3	7874.4	8189.5	8535.8	8920.4	9352.9	9847.2	10424.1	11117.1	31
32	7322.5	7590.0	7879.4	8195.0	8541.8	8927.1	9360.6	9856.0	10434.6	11129.9	32
33	7326.8	7594.6	7884.5	8200.5	8547.9	8933.9	9368.3	9864.9	10445.1	11142.8	33
34	7331.1	7599.2	7889.5	8206.0	8554.0	8940.8	9376.0	9873.8	10455.6	11155.7	34
35	7335.4	7603.9	7894.5	8211.5	8560.1	8947.6	9383.7	9882.8	10466.2	11168.6	35
36	7339.7	7608.5	7899.6	8217.0	8566.2	8954.4	9391.5	9891.7	10476.8	11181.7	36
37	7344.1	7613.2	7904.7	8222.6	8572.4	8961.3	9399.3	9900.7	10487.4	11194.7	37
38	7348.4	7617.9	7909.7	8228.1	8578.5	8968.1	9407.0	9909.7	10498.1	11207.8	38
39	7352.7	7622.5	7914.8	8233.7	8584.7	8975.0	9414.8	9918.8	10508.8	11221.0	39
40	7357.0	7627.2	7919.9	8239.3	8590 8	8981.9	9422.7	9927.8	10519.6	11234.2	40
41	7361.4	7631.9	7925.0	8244.8	8597.0	8988.8	9430.5	9936.9	10530.3	11247.4	41
42	7365.7	7636.6	7930.1	8250.4	8603.2	8995.7	9438.4	9946.0	10541.1	11260.8	42
43	7370.1	7641.3	7935.2	8256.0	8609.4	9002.7	9446.3	9955.1	10552.0	11274.1	43
44	7374.4	7646.0	7940.3	8261.6	8615.6	9009.6	9454.2	9964.3	10562.9	11287.5	44
45	7378.8	7650.7	7945.4	8267.2	8621.8	9016.6	9462.1	9973.4	10573.8	11301.0	45
46	7383.1	7655.4	7950.5	8272.9	8628.0	9023.5	9470.0	9982.6	10584.7	11314.5	46
47	7387.5	7660.1	7955.7	8278.5	8634.2	9030.5	9477.9	9991.8	10595.7	11328.1	47
48	7391.9	7665.8	7960.8	8284.1	8640.5	9037.5	9485.9	10001.1	10606.7	11341.7	48
49	7396.3	7669.6	7966.0	8289.8	8646.8	9044.6	9493.9	10010.4	10617.8	11355.4	49
50	7400.6	7674.3	7971.1	8295.4	8653.0	9051.6	9501.9	10019.7	10628.9	11369.1	50
51	7405.0	7679.1	7976.3	8301.1	8659.3	9058.6	9509.9	10029.0	10640.0	11382.9	51
52	7409.4	7683.8	7981.5	8306.8	8665.6	9065.7	9518.0	10038.3	10651.1	11396.8	52
53	7413.8	7688.6	7986.7	8312.5	8671.9	9072.8	9526.0	10047.7	10662.3	11410.7	53
54	7418.2	7693.4	7991.8	8318.2	8678.2	9079.9	9534.1	10057.1	10673.6	11424.6	54
55	7422.7	7698.1	7997.0	8323.9	8684.5	9087.0	9542.2	10066.5	10684.8	11438.6	55
56	7427.1	7702.9	8002.2	8329.6	8690.9	9094.1	9550.3	10076.0	10696.1	11452.7	56
57	7431.5	7707.7	8007.5	8335.3	8697.2	9101.2	9558.5	10085.4	10707.5	11466.8	57
58	7435.9	7712.5	8012.7	8341.1	8703.6	9108.4	9566.6	10094.9	10718.8	11481.0	58
59	7440.4	7717.3	8017.9	8346.8	8710.0	9115.5	9574.8	10104.5	10730.3	11495.3	59
M.	76°	77°	78°	79°	80°	81°	82°	83°	84°	85°	M.

TABLE XII. JANUARY AND FEBRUARY, 1882.

Day of Month.	At Greenwich. App. Noon.		At Greenwich. Mean Noon.			Equation of Time.		
	The Sun's Apparent Declination.	Difference for 1 Hour.	The Sun's Apparent Declination.	Difference for 1 Hour.	The Sun's Semi-Diameter.	Equation of Time to be Added to App. Time.	Diff. for 1 Hour.	Equation of Time to be Subtracted from Mean Time.
Jan.	o ′ ″	″	o ′ ″	″	′ ″	m. s.	s.	m. s.
1	S.22 59 37.6	+12.66	S.22 59 38.4	+12.65	16 18.39	3 53.49	1.175	3 53.41
2	22 54 20.1	13.81	22 54 21.1	13.80	16 18.38	4 21.53	1.160	4 21.44
3	22 48 35.2	14.94	22 48 36.4	14.93	16 18.38	4 49.19	1.144	4 49.10
4	22 42 23.1	+16.07	22 42 24.6	+16.06	16 18.37	5 16.46	1.127	5 16.36
5	22 35 44.1	17.20	22 35 45.8	17.19	16 18.35	5 43.30	1.108	5 43.20
6	22 28 38.1	18.31	22 28 40.1	18.30	16 18.32	6 9.71	1.089	6 9.60
7	22 21 5.6	+19.41	22 21 7.8	+19.40	16 18.29	6 35.64	1.069	6 35.53
8	22 13 6.6	20.50	22 13 9.1	20.49	16 18.26	7 1.08	1.049	7 0.96
9	22 4 41.6	21.58	22 4 44.3	21.57	16 18.21	7 26.00	1.027	7 25.87
10	21 55 50.6	+22.66	21 55 53.6	+22.66	16 18.16	7 50.38	1.004	7 50.25
11	21 46 33.9	23.73	21 46 37.2	23.72	16 18.11	8 14.20	0.980	8 14.07
12	21 36 51.6	24.78	21 36 55.2	24.77	16 18.05	8 37.45	0.956	8 37.31
13	21 26 44.2	+25.82	21 26 48.1	+25.81	16 17.98	9 0.09	0.930	8 59.94
14	21 16 12.0	26.85	21 16 16.2	26.84	16 17.91	9 22.10	0.904	9 21.96
15	21 5 15.2	27.87	21 5 19.7	27.86	16 17.84	9 43.47	0.876	9 43.33
16	20 53 54.1	+28.87	20 53 58.9	+28.86	16 17.76	10 4.19	0.848	10 4.05
17	20 42 9.2	29.85	20 42 14.3	29.84	16 17.68	10 24.21	0.819	10 24.06
18	•20 30 0.6	30.82	20 30 6.1	30.81	16 17.59	10 43.51	0.789	10 43.37
19	20 17 28.9	+31.79	20 17 34.7	+31.78	16 17.50	11 2.09	0.759	11 1.95
20	20 4 34.2	32.74	20 4 40.4	32.73	16 17.41	11 19.93	0.727	11 19.80
21	19 51 17.1	33.67	19 51 23.6	33.66	16 17.31	11 37.01	0.695	11 36.87
22	19 37 37.9	+34.59	19 37 44.7	+34.58	16 17.21	11 53.31	0.662	11 53.18
23	19 23 36.9	35.48	19 23 44.0	35.47	16 17.11	12 8.82	0.629	12 8.69
24	19 9 14.4	36.37	19 9 21.9	36.36	16 17.00	12 23.52	0.595	12 23.40
25	18 54 31.0	+37.23	18 54 38.8	+37.22	16 16.89	12 37.41	0.561	12 37.29
26	18 39 27.1	38.08	18 39 35.3	38.07	16 16.77	12 50.48	0.527	12 50.37
27	18 24 3.0	38.91	18 24 11.5	38.90	16 16.65	13 2.73	0.492	13 2.62
28	18 8 19.0	+39.74	18 8 27.8	+39.73	16 16.53	13 14.14	0.457	13 14.04
29	17 52 15.6	40.54	17 52 24.7	40.53	16 16.40	13 24.70	0.422	13 24.61
30	17 35 53.0	41.33	17 36 2.4	41.32	16 16.26	13 34.43	0.388	13 34.35
31	17 19 11.8	42.08	17 19 21.5	42.07	16 16.12	13 43.34	0.353	13 43.26
Feb.	o ′ ″	″	o ′ ″	″	′ ″	m. s.	s.	m. s.
1	S.17 2 12.5	+42.83	S.17 2 22.4	+42.82	16 15.98	13 51.41	0.318	13 51.34
2	16 44 55.2	43.57	16 45 5.4	43.57	16 15.83	13 58.65	0.284	13 58.58
3	16 27 20.5	44.30	16 27 30.9	44.30	16 15.67	14 5.06	0.250	14 5.01
4	16 9 29.6	+45.00	16 9 39.2	+44.99	16 15.51	14 10.66	0.216	14 10.61
5	15 51 19.9	45.70	15 51 30.8	45.69	16 15.35	14 15.45	0.183	14 15.41
6	15 32 55.0	46.37	15 33 6.1	46.36	16 15.17	14 19.43	0.150	14 19.40
7	15 14 14.1	+47.04	15 14 25.4	+47.03	16 14.99	14 22.62	0.117	14 22.60
8	14 55 17.6	47.67	14 55 29.1	47.66	16 14.81	14 25.02	0.084	14 25.01
9	14 36 6.1	48.28	14 36 17.7	48.28	16 14.63	14 26.66	0.052	14 26.65
10	14 16 39.8	+48.89	14 16 51.6	+48.88	16 14.44	14 27.53	0.020	14 27.51
11	13 56 59.3	49.48	13 57 11.2	49.47	16 14.24	14 27.63	0.011	14 27.63
12	13 37 4.8	50.04	13 37 16.9	50.03	16 14.05	14 26.98	0.042	14 26.99
13	13 16 56.9	+50.60	13 17 9.1	+50.59	16 13.85	14 25.61	0.073	14 25.63
14	12 56 36.0	51.13	12 56 48.3	51.12	16 13.65	14 23.50	0.104	14 23.52
15	12 36 2.5	51.65	12 36 14.9	51.65	16 13.44	14 20.66	0.134	14 20.70
16	12 15 16.8	+52.14	12 15 29.3	+52.14	16 13.24	14 17.11	0.164	14 17.15
17	11 54 19.6	52.62	11 54 32.1	52.62	16 13.03	14 12.85	0.193	14 12.90
18	11 33 11.1	53.07	11 33 23.6	53.07	16 12.82	14 7.89	0.222	14 7.94
19	11 11 51.7	+53.53	11 12 4.2	+53.53	16 12.60	14 2.25	0.250	14 2.31
20	10 50 21.8	53.94	10 50 34.3	53.96	16 12.39	13 55.93	0.278	13 55.99
21	10 28 42.0	54.36	10 28 54.5	54.36	16 12.17	13 48.95	0.305	13 49.02
22	10 6 52.8	+54.74	10 7 5.3	+54.74	16 11.95	13 41.32	0.332	13 41.39
23	9 44 54.1	55.11	9 45 6.5	55.11	16 11.73	13 33.05	0.359	13 33.14
24	9 22 46.8	55.47	9 22 59.2	55.47	16 11.51	13 24.16	0.384	13 24.24
25	9 0 31.3	+55.81	9 0 43.6	+55.81	16 11.28	13 14.65	0.409	13 14.74
26	8 38 7.9	56.13	8 38 20.1	56.13	16 11.05	13 4.54	0.433	13 4.63
27	8 15 37.0	56.44	8 15 49.1	56.44	16 10.81	12 53.87	0.457	12 53.96
28	7 52 58.9	56.73	7 53 10.9	56.73	16 10.58	12 42.63	0.480	12 42.73

TABLE XII. MARCH AND APRIL, 1882. 133

Day of Month	At Greenwich. App. Noon.		At Greenwich. Mean Noon.			Equation of Time.		
	The Sun's Apparent Declination.	Difference for 1 Hour.	The Sun's Apparent Declination.	Difference for 1 Hour.	The Sun's Semi-Diameter.	Equation of Time to be Added to or Subtracted from App. Time.	Diff. for 1 Hour.	Equation of Time to be Subtracted from or Added to Mean Time.
Mar.	° ′ ″	″	° ′ ″	″	′ ″	m. s.	s.	m. s.
1	S.7 30 14.1	+57.00	S.7 30 26.0	+57.01	16 10.34	12 30.84	0.503	12 30.94
2	7 07 22.9	57.25	7 7 34.7	57.26	16 10.10	12 18.55	0.524	12 18.65
3	6 44 25.7	57.49	6 44 37.3	57.50	16 9.86	12 5.77	0.544	12 5.87
4	6 21 22.8	+57.71	6 21 34.3	+57.72	16 9.61	11 52.50	0.563	11 52.60
5	5 58 14.7	57.93	5 58 26.0	57.94	16 9.36	11 38.79	0.581	11 38.90
6	5 35 1.7	58.13	5 35 12.8	58.14	16 9.10	11 24.65	0.599	11 24.75
7	5 11 44.2	+58.32	5 11 55.1	+58.33	16 8.84	11 10.10	0.615	11 10.21
8	4 48 22.5	58.48	4 48 33.1	58.49	16 8.58	10 55.17	0.630	10 55.28
9	4 24 57.0	58.64	4 25 7.3	58.65	16 8.32	10 39.88	0.645	10 39.99
10	4 1 28.0	+58.77	4 1 38.1	+58.78	16 8.05	10 24.25	0.658	10 24.36
11	3 37 55.9	58.89	3 38 5.8	58.90	16 7.78	10 8.31	0.671	10 8.42
12	3 14 21.1	58.99	3 14 30.8	59.00	16 7.51	9 52.09	0.683	9 52.19
13	2 50 44.1	+59.00	2 50 53.5	+59.10	16 7.24	9 35.59	0.694	9 35.70
14	2 27 5.1	59.15	2 27 14.3	59.16	16 6.97	9 18.82	0.704	9 18.93
15	2 3 24.6	59.21	2 3 33.5	59.22	16 6.70	9 1.81	0.713	9 1.93
16	1 39 42.9	+59.24	1 39 51.6	+59.25	16 6.43	8 44.60	0.722	8 44.71
17	1 16 0.5	59.28	1 16 8.9	59.29	16 6.15	8 27.21	0.730	8 27.31
18	0 52 17.8	59.28	0 52 25.9	59.29	16 5.88	8 9.63	0.737	8 9.73
19	0 28 35.1	+59.28	0 28 42.9	+59.29	16 5.61	7 51.87	0.744	7 51.97
20	S.0 4 52.7	59.25	S.0 5 0.2	59.26	16 5.34	7 33.96	0.750	7 34.06
21	N.0 18 49.0	59.21	N.0 18 41.8	59.22	16 5.06	7 15.93	0.755	7 16.02
22	0 42 29.5	+59.15	0 42 22.6	+59.16	16 4.79	6 57.79	0.759	6 57.87
23	1 6 8.5	59.09	1 6 1.9	59.10	16 4.52	6 39.55	0.762	6 39.63
24	1 29 45.4	59.00	1 29 39.1	59.01	16 4.25	6 21.23	0.766	6 21.31
25	1 53 20.1	+58.90	1 53 14.1	+58.91	16 3.98	6 2.84	0.768	6 2.92
26	2 16 52.2	58.77	2 16 46.5	58.78	16 3.71	5 44.40	0.769	5 44.48
27	2 40 21.4	58.65	2 40 16.0	58.66	16 3.44	5 25.95	0.770	5 26.02
28	3 3 47.3	+58.50	3 3 42.2	+58.51	16 3.17	5 7.49	0.769	5 7.56
29	3 27 9.4	58.35	3 27 4.6	58.36	16 2.89	4 49.05	0.768	4 49.12
30	3 50 27.5	58.17	3 50 23.1	58.18	16 2.62	4 30.65	0.766	4 30.71
31	4 13 41.4	57.98	4 13 37.3	57.99	16 2.35	4 12.31	0.763	4 12.37
Apr.	° ′ ″	″	° ′ ″	″	′	m. s.	s.	m. s.
1	N.4 36 50.6	+57.78	N.4 36 46.8	+57.79	16 2.08	3 54.05	0.759	3 54.10
2	4 59 54.8	57.57	4 59 51.3	57.58	16 1.80	3 35.90	0.754	3 35.94
3	5 22 53.7	57.34	5 22 50.5	57.35	16 1.52	3 17.87	0.748	3 17.91
4	5 45 47.1	+57.11	5 45 44.2	+57.12	16 1.25	2 59.99	0.743	3 0.03
5	6 8 34.4	56.85	6 8 31.8	56.86	16 0.97	2 42.27	0.735	2 42.31
6	6 31 15.5	56.58	6 31 13.2	56.59	16 0.70	2 24.75	0.726	2 24.78
7	6 53 49.9	+56.31	6 53 47.9	+56.32	16 0.42	2 7.45	0.716	2 7.48
8	7 16 17.4	56.00	7 16 15.7	56.01	16 0.14	1 50.39	0.706	1 50.42
9	7 38 37.7	55.69	7 38 36.3	55.70	15 59.86	1 33.59	0.695	1 33.61
10	8 0 50.3	+55.36	8 0 49.1	+55.37	15 59.58	1 17.07	0.684	1 17.08
11	8 22 54.9	55.03	8 22 54.0	55.04	15 59.30	1 0.83	0.671	1 0.84
12	8 44 51.4	54.67	8 44 50.7	54.68	15 59.03	0 44.91	0.658	0 44.91
13	9 6 39.1	+54.30	9 6 38.7	+54.31	15 58.75	0 29.30	0.644	0 29.30
14	9 28 17.8	53.91	9 28 17.6	53.92	15 58.48	0 14.03	0.629	0 14.03
15	9 49 47.2	53.52	9 49 47.2	53.53	15 58.21	0 0.89	0.614	0 0.89
16	10 11 6.8	+53.11	10 11 7.0	+53.12	15 57.95	0 15.44	0.598	0 15.44
17	10 32 16.4	52.69	10 32 16.8	52.70	15 57.68	0 29.60	0.582	0 29.60
18	10 53 15.6	52.24	10 53 16.2	52.25	15 57.42	0 43.36	0.566	0 43.37
19	11 14 4.1	+51.78	11 14 4.8	+51.79	15 57.16	0 56.74	0.550	0 56.75
20	11 34 41.4	51.31	11 34 42.3	51.32	15 56.91	1 9.72	0.533	1 9.73
21	11 55 7.3	50.83	11 55 8.4	50.84	15 56.65	1 22.29	0.515	1 22.30
22	12 15 21.4	+50.33	12 15 22.7	+50.34	15 56.40	1 34.42	0.497	1 34.42
23	12 35 23.4	49.81	12 35 24.8	49.82	15 56.15	1 46.10	0.478	1 46.11
24	12 55 13.0	49.29	12 55 14.5	49.30	15 55.91	1 57.33	0.459	1 57.34
25	13 14 49.8	+48.76	13 14 51.5	+48.77	15 55.66	2 8.11	0.440	2 8.12
26	13 34 13.4	48.20	13 34 15.3	48.21	15 55.42	2 18.42	0.420	2 18.43
27	13 53 23.6	47.63	13 53 25.6	47.63	15 55.18	2 28.26	0.400	2 28.28
28	14 12 20.1	+47.07	14 12 22.2	+47.07	15 54.94	2 37.61	0.380	2 37.63
29	14 31 2.6	46.48	14 31 4.8	46.48	15 54.70	2 46.47	0.360	2 46.50
30	14 49 30.8	45.87	14 49 33.0	45.87	15 54.47	2 54.82	0.338	2 54.84

Day of Month	At Greenwich. App. Noon.		At Greenwich. Mean Noon.			Equation of Time.		
	The Sun's Apparent Declination.	Difference for 1 Hour.	The Sun's Apparent Declination.	Difference for 1 Hour.	The Sun's Semi-Diameter.	Equation of Time to be Subtracted from or Added to App. Time.	Diff. for 1 Hour.	Equation of Time to be Added to or Subtracted from Mean Time.
May	° ′ ″	″	° ′ ″	″	′ ″	m. s.	s.	m. s.
1	N.15 7 44.3	+45.25	N.15 7 46.6	+45.25	15 54.23	3 2.65	0.316	3 2.67
2	15 25 42.9	44.63	15 25 45.2	44.63	15 54.00	3 9.94	0.293	3 9.96
3	15 43 26.2	43.98	15 43 28.6	43.98	15 53.77	3 16.69	0.270	3 16.71
4	16 0 54.0	+43.32	16 0 56.4	+43.32	15 53.54	3 22.88	0.246	3 22.89
5	16 18 5.9	42.66	16 18 8.3	42.66	15 53.31	3 28.50	0.223	3 28.51
6	16 35 1.7	41.99	16 35 4.1	41.99	15 53.08	3 33.55	0.199	3 33.55
7	16 51 41.1	+41.29	16 51 43.6	+41.29	15 52.85	3 38.02	0.175	3 38.03
8	17 8 3.6	40.58	17 8 6.1	40.58	15 52.63	3 41.91	0.150	3 41.92
9	17 24 9.1	39.87	17 24 11.6	39.87	15 52.41	3 45.22	0.125	3 45.23
10	17 39 57.1	+39.14	17 39 59.6	+39.14	15 52.19	3 47.93	0.100	3 47.93
11	17 55 27.6	38.40	17 55 30.1	38.40	15 51.97	3 50.03	0.075	3 50.04
12	18 10 40.2	37.64	18 10 42.6	37.64	15 51.76	3 51.54	0.051	3 51.54
13	18 25 34.5	+36.88	18 25 36.9	+36.88	15 51.55	3 52.46	0.026	3 52.46
14	18 40 10.3	36.10	18 40 12.6	36.10	15 51.35	3 52.79	0.002	3 52.79
15	18 54 27.1	35.30	18 54 29.4	35.30	15 51.15	3 52.53	0.022	3 52.54
16	19 8 24.9	+34.49	19 8 27.1	+34.49	15 50.95	3 51.70	0.046	3 51.70
17	19 22 3.2	33.68	19 22 5.4	33.68	15 50.76	3 50.30	0.070	3 50.30
18	19 35 22.0	32.86	19 35 24.1	32.86	15 50.58	3 48.33	0.093	3 48.33
19	19 48 20.7	+32.02	19 48 22.7	+32.02	15 50.39	3 45.82	0.116	3 45.82
20	20 0 59.2	31.17	20 1 1.1	31.17	15 50.21	3 42.77	0.139	3 42.76
21	20 13 17.1	30.32	20 13 19.0	30.32	15 50.04	3 39.17	0.161	3 39.16
22	20 25 14.4	+29.45	20 25 16.2	+29.45	15 49.87	3 35.04	0.182	3 35.03
23	20 36 50.7	28.56	20 36 52.4	28.56	15 49.70	3 30.42	0.203	3 30.42
24	20 48 5.8	27.67	20 48 7.4	27.67	15 49.54	3 25.31	0.223	3 25.30
25	20 58 59.4	+26.77	20 59 0.9	+26.77	15 49.38	3 19.70	0.243	3 19.69
26	21 9 31.5	25.87	21 9 32.9	25.87	15 49.23	3 13.61	0.263	3 13.60
27	21 19 41.6	24.95	21 19 42.9	24.95	15 49.08	3 7.06	0.282	3 7.05
28	21 29 29.6	+24.03	21 29 30.8	+24.03	15 48.93	3 0.06	0.301	3 0.05
29	21 38 55.3	23.10	21 38 56.4	23.10	15 48.78	2 52.61	0.319	2 52.60
30	21 47 58.4	22.16	21 47 59.4	22.16	15 48.64	2 44.72	0.337	2 44.71
31	21 56 38.9	21.21	21 56 39.8	21.21	15 48.50	2 36.40	0.354	2 36.40
June	° ′ ″	″	° ′ ″	″	′ ″	m. s.	s.	m. s.
1	N.22 4 56.5	+20.26	N.22 4 57.3	+20.26	15 48.37	2 27.67	0.372	2 27.66
2	22 12 51.1	19.29	22 12 51.9	19.29	15 48.24	2 18.55	0.388	2 18.54
3	22 20 22.5	18.32	22 20 23.2	18.32	15 48.11	2 9.04	0.404	2 9.03
4	22 27 30.5	+17.34	22 27 31.1	+17.34	15 47.98	1 59.16	0.419	1 59.15
5	22 34 14.9	16.35	22 34 15.4	16.35	15 47.86	1 48.91	0.433	1 48.90
6	22 40 35.6	15.36	22 40 36.1	15.36	15 47.74	1 38.32	0.447	1 38.31
7	22 46 32.6	+14.37	22 46 33.0	+14.37	15 47.62	1 27.41	0.461	1 27.40
8	22 52 5.6	13.37	22 52 5.9	13.37	15 47.50	1 16.19	0.474	1 16.18
9	22 57 14.5	12.36	22 57 14.7	12.36	15 47.39	1 4.67	0.485	1 4.66
10	23 1 59.2	+11.35	23 1 59.3	+11.35	15 47.28	0 52.88	0.496	0 52.87
11	23 6 19.5	10.33	23 6 19.6	10.33	15 47.18	0 40.85	0.506	0 40.84
12	23 10 15.4	9.31	23 10 15.5	9.31	15 47.08	0 28.59	0.515	0 28.58
13	23 13 46.9	+ 8.30	23 13 46.9	+ 8.30	15 46.99	0 16.13	0.522	0 16.13
14	23 16 53.8	7.27	23 16 53.8	7.27	15 46.91	0 3.51	0.528	0 3.52
15	23 19 36.0	6.24	23 19 36.0	6.24	15 46.83	0 9.26	0.534	0 9.26
16	23 21 53.5	+ 5.21	23 21 53.5	+ 5.21	15 46.75	0 22.15	0.538	0 22.15
17	23 23 46.4	4.18	23 23 46.4	4.18	15 46.68	0 35.14	0.542	0 35.13
18	23 25 14.5	3.15	23 25 14.5	3.15	15 46.62	0 48.20	0.544	0 48.17
19	23 26 17.8	+ 2.12	23 26 17.8	+ 2.12	15 46.56	1 1.28	0.545	1 1.27
20	23 26 56.3	1.09	23 26 56.3	1.09	15 46.51	1 14.37	0.544	1 14.36
21	23 27 10.0	+ 0.05	23 27 10.0	+ 0.05	15 46.46	1 27.44	0.544	1 27.43
22	23 26 58.9	− 0.98	23 26 58.9	− 0.98	15 46.42	1 40.47	0.542	1 40.46
23	23 26 23.0	2.01	23 26 23.1	2.01	15 46.38	1 53.44	0.538	1 53.43
24	23 25 22.4	3.04	23 25 22.6	3.04	15 46.35	2 6.29	0.533	2 6.28
25	23 23 57.1	− 4.07	23 23 57.3	− 4.07	15 46.32	2 19.04	0.527	2 19.02
26	23 22 7.1	5.10	23 22 7.4	5.10	15 46.29	2 31.65	0.521	2 31.62
27	23 19 52.5	6.12	23 19 52.8	6.12	15 46.27	2 44.10	0.515	2 44.08
28	23 17 13.4	− 7.15	23 17 13.7	− 7.15	15 46.25	2 56.37	0.507	2 56.35
29	23 14 9.8	8.17	23 14 10.2	8.17	15 46.23	3 8.45	0.498	3 8.42
30	23 10 41.6	9.19	23 10 42.1	9.19	15 46.22	3 20.31	0.488	3 20.27

TABLE XII. SEPTEMBER AND OCTOBER, 1882.

Day of Month.	At Greenwich. App. Noon. The Sun's Apparent Declination.	Difference for 1 Hour.	At Greenwich. Mean Noon. The Sun's Apparent Declination.	Difference for 1 Hour.	The Sun's Semi-Diameter.	Equation of Time to be Subtracted from App. Time.	Diff. for 1 Hour.	Equation of Time to be Added to Mean Time.
	° ′ ″	″	° ′ ″	″	′ ″	m. s.	s.	m. s.
Sept.								
1	N. 8 14 4.4	−54.49	N. 8 14 4.3	−54.50	15 53.75	0 7.93	0.788	0 7.93
2	7 52 12.7	54.82	7 52 12.3	54.83	15 53.98	0 26.94	0.799	0 26.95
3	7 30 13.3	55.14	7 30 12.6	55.15	15 54.21	0 46.21	0.810	0 46.22
4	7 8 6.4	−55.44	7 8 5.4	−55.45	15 54.44	1 5.74	0.820	1 5.75
5	6 45 52.5	55.73	6 45 51.1	55.74	15 54.67	1 25.50	0.829	1 25.52
6	6 23 31.7	56.01	6 23 30.1	56.01	15 54.91	1 45.48	0.838	1 45.50
7	6 1 4.5	−56.27	6 1 2.6	−56.28	15 55.15	2 5.63	0.845	2 5.66
8	5 38 31.2	56.51	5 38 29.0	56.52	15 55.39	2 25.95	0.851	2 25.98
9	5 15 52.3	56 75	5 15 49.7	56.76	15 55.63	2 46.42	0.856	2 46.45
10	4 53 7.9	−56.96	4 53 5.0	−56.97	15 55.88	3 7.03	0.861	3 7.05
11	4 30 18.5	57.15	4 30 15.2	57.17	15 56.13	3 27.75	0.866	3 27.78
12	4 7 24.4	57.34	4 7 20.8	57.36	15 56.38	3 48.58	0.871	3 48.62
13	3 44 26.0	−57.52	3 44 22.0	−57.54	15 56.63	4 9.50	0.875	4 9.56
14	3 21 23.5	57.68	3 21 19.2	57.70	15 56.89	4 30.51	0.877	4 30.57
15	2 58 17.4	57.82	2 58 12.7	57.84	15 57.16	4 51.57	0.879	4 51.64
16	2 35 7.9	−57.96	2 35 2.9	−57.98	15 57.42	5 12.68	0.880	5 12.75
17	2 11 55.5	58.07	2 11 50.1	58.09	15 57.69	5 33.81	0.881	5 33.89
18	1 48 40.4	58.17	1 48 34.7	58.19	15 57.96	5 54.95	0.881	5 55.03
19	1 25 23.2	−58.26	1 25 17.1	−58.28	15 58.23	6 16.08	0.880	6 16.17
20	1 2 4.0	58.33	1 1 57.6	58.35	15 58.50	6 37.19	0.878	6 37.28
21	0 38 43.3	58.39	0 38 36.5	58.41	15 58.78	6 58.23	0.877	6 58.33
22	N. 0 15 21.2	−58.43	N. 0 15 14.0	−58.45	15 59.05	7 19.31	0.874	7 19.31
23	S. 0 8 1.8	58.47	S. 0 8 9.3	58.49	15 59.33	7 40.09	0.869	7 40.20
24	0 31 25.5	58.49	0 31 33.3	58.51	15 59.60	8 0.87	0.863	8 0.98
25	0 54 49.4	−58.49	0 54 57.6	−58.51	15 59.88	8 21.51	0.857	8 21.63
26	1 18 13.4	58.49	1 18 21.9	58.51	16 0.15	8 41.99	0.850	8 42.11
27	1 41 36.8	58.46	1 41 45.7	58.48	16 0.43	9 2.27	0.842	9 2.39
28	2 4 59.7	−58.42	2 5 8.9	−58.44	16 0.70	9 22.35	0.832	9 22.47
29	2 28 21.5	58.37	2 28 31.0	58.39	16 0.97	9 42.20	0.823	9 42.32
30	2 51 42.1	58.30	2 51 51.9	58.32	16 1.24	10 1.79	0.812	10 1.92
Oct.								
1	S. 3 15 0.9	−58.23	S. 3 15 11.0	−58.26	16 1.52	10 21.10	0.799	10 21.23
2	3 38 17.7	58.15	3 38 28.1	58.16	16 1.79	10 40.09	0.786	10 40.22
3	4 1 32.1	58.05	4 1 42.7	58.06	16 2.06	10 58.76	0.772	10 58.90
4	4 24 43.9	−57.92	4 24 54.7	−57.93	16 2.33	11 17.09	0.756	11 17.23
5	4 47 52.4	57.78	4 48 3.5	57.79	16 2.60	11 35.04	0.741	11 35.18
6	5 10 57.5	57.63	5 11 8.9	57.64	16 2.87	11 52.60	0.724	11 52.74
7	5 33 58.6	−57.46	5 34 10.3	−57.47	16 3.14	12 9.74	0.706	12 9.87
8	5 56 55.7	57.27	5 57 7.6	57.28	16 3.41	12 26.45	0.688	12 26.59
9	6 19 48.2	57.08	6 20 0.3	57.10	16 3.69	12 42.73	0.669	12 42.87
10	6 42 35.7	−56.87	6 42 47.9	−56.88	16 3.96	12 58.55	0.649	12 58.69
11	7 5 17.9	56.64	7 5 30.4	56.64	16 4.24	13 13.88	0.629	13 14.02
12	7 27 54.2	56.39	7 28 6.9	56.40	16 4.51	13 28.72	0.608	13 28.87
13	7 50 24.5	−56.12	7 50 37.3	−56.13	16 4.79	13 43.05	0.586	13 43.19
14	8 12 48.1	55.83	8 13 1.1	55.84	16 5.06	13 56.86	0.565	13 57.00
15	8 35 4.8	55.54	8 35 17.9	55.55	16 5.34	14 10.14	0.542	14 10.27
16	8 57 14.1	−55.22	8 57 27.3	−55.23	16 5.61	14 22.86	0.519	14 22.99
17	9 19 15.8	54.89	9 19 29.1	54.90	16 5.89	14 35.02	0.495	14 35.14
18	9 41 9.3	54.56	9 41 22.7	54.56	16 6.17	14 46.60	0.471	14 46.72
19	10 2 54.3	−54.19	10 3 7.8	−54.19	16 6.45	14 57.59	0.446	14 57.70
20	10 24 30.4	53.81	10 24 44.0	53.81	16 6.73	15 7.95	0.420	15 8.06
21	10 45 57.2	53.42	10 46 10.8	53.42	16 7.00	15 17.69	0.393	15 17.79
22	11 7 14.3	−53.00	11 7 28.0	−53.00	16 7.27	15 26.79	0.366	15 26.88
23	11 28 21.3	52.57	11 28 35.0	52.57	16 7.55	15 35.23	0.338	15 35.31
24	11 49 18.0	52.13	11 49 31.7	52.13	16 7.82	15 42.99	0.309	15 43.07
25	12 10 3.8	−51.67	12 10 17.4	−51.67	16 8.08	15 50.06	0.279	15 50.13
26	12 30 38.3	51.19	12 30 51.9	51.19	16 8.34	15 56.41	0.250	15 56.47
27	12 51 1.3	50.71	12 51 15.0	50.71	16 8.60	16 2.02	0.219	16 2.07
28	13 11 12.4	−50.20	13 11 25.9	−50.20	16 8.86	16 6.88	0.187	16 6.94
29	13 31 11.1	49.68	13 31 24.5	49.68	16 9.11	16 10.98	0.155	16 11.02
30	13 50 57.0	49.13	13 51 10.3	49.13	16 9.36	16 14.31	0.122	16 14.34
31	14 10 29.6	48.57	14 10 42.8	48.57	16 9.61	16 16.85	0.089	16 16.87

TABLE XII.

TABLE XIII.

Mean Refraction.

Barometer 30 inches.   Fahrenheit's Thermometer 50°.

Apparent Altitude.	Mean Refraction.	Apparent Altitude.	Mean Refraction.	Apparent Altitude.	Mean Refraction	Apparent Altitude.	Mean Refraction	Apparent Altitude.	Mean Refraction
° ′	′ ″	° ′	′ ″	° ′	′ ″	° ′	′ ″	° ′	′ ″
		9 30	5 35.1	15 0	3 34.1	25 0	2 4.4	42 0	1 4.7
0 0	36 29.4	9 35	5 32.4	15 10	3 31.7	25 10	2 3.4	42 20	1 3.9
1 0	24 53.6	9 40	5 29.6	15 20	3 29.4	25 20	2 2.5	42 40	1 3.2
2 0	18 25.5	9 45	5 27.0	15 30	3 27.1	25 30	2 1.6	43 0	1 2.4
3 0	14 25.1	9 50	5 24.3	15 40	3 24.8	25 40	2 0.7	43 20	1 1.7
4 0	11 44.4	9 55	5 21.7	15 50	3 22.6	25 50	1 59.8	43 40	1 1.0
5 0	9 52.0	10 0	5 19.2	16 0	3 20.5	26 0	1 58.9	44 0	1 0.3
5 5	9 44.0	10 5	5 16.7	16 10	3 18.4	26 10	1 58.1	44 20	0 59.6
5 10	9 36.2	10 10	5 14.2	16 20	3 16.3	26 20	1 57.2	44 40	0 58.9
5 15	9 28.6	10 15	5 11.7	16 30	3 14.2	26 30	1 56.4	45 0	0 58.2
5 20	9 21.2	10 20	5 9.3	16 40	3 12.2	26 40	1 55 5	45 20	0 57.6
5 25	9 14.0	10 25	5 6.9	16 50	3 10.3	26 50	1 54.7	45 40	0 56.9
5 30	9 7.0	10 30	5 4.6	17 0	3 8.3	27 0	1 53.9	46 0	0 56.2
5 35	9 0.1	10 35	5 2.3	17 10	3 6.4	27 10	1 53.1	46 20	0 55.6
5 40.	8 53.4	10 40	5 0.0	17 20	3 4.6	27 20	1 52.3	46 40	0 55.0
5 45	8 46.8	10 45	4 57.8	17 30	3 2.8	27 30	1 51.5	47 0	0 54.3
5 50	8 40.4	10 50	4 55.6	17 40	3 1.0	27 40	1 50.7	47 20	0 53.7
5 55	8 34.2	10 55	4 53.4	17 50	2 59.2	27 50	1 50.0	47 40	0 53.1
6 0	8 28.0	11 0	4 51.2	18 0	2 57.5	28 0	1 49.2	48 0	0 52.5
6 5	8 22.1	11 5	4 49.1	18 10	2 55.8	28 20	1 47.7	49 0	0 50.6
6 10	8 16.2	11 10	4 47.0	18 20	2 54.1	28 40	1 46.2	50 0	0 48.9
6 15	8 10.5	11 15	4 44.9	18 30	2 52.4	29 0	1 44.8	51 0	0 47.2
6 20	8 4.8	11 20	4 42.9	18 40	2 50.8	29 20	1 43.4	52 0	0 45.5
6 25	7 59.3	11 25	4 40.9	18 50	2 49.2	29 40	1 42.0	53 0	0 43.9
6 30	7 53.9	11 30	4 38.9	19 0	2 47.7	30 0	1 40.6	54 0	0 42.3
6 35	7 48.7	11 35	4 36.9	19 10	2 46.1	30 20	1 39.3	55 0	0 40.8
6 40	7 43.5	11 40	4 35.0	19 20	2 44.6	30 40	1 38.0	56 0	0 39.3
6 45	7 38.4	11 45	4 33.1	19 30	2 43.1	31 0	1 36.7	57 0	0 37.8
6 50	7 33.5	11 50	4 31.2	19 40	2 41.6	31 20	1 35.5	58 0	0 36.4
6 55	7 28.6	11 55	4 29.4	19 50	2 40.2	31 40	1 34.2	59 0	0 35.0
7 0	7 23.8	12 0	4 27.5	20 0	2 38.8	32 0	1 33.0	60 0	0 33.6
7 5	7 19.2	12 5	4 25.7	20 10	2 37.4	32 20	1 31.8	61 0	0 32.3
7 10	7 14.6	12 10	4 23.9	20 20	2 36.0	32 40	1 30.7	62 0	0 31.0
7 15	7 10.1	12 15	4 22.2	20 30	2 34.6	33 0	1 29.5	63 0	0 29.7
7 20	7 5.7	12 20	4 20.4	20 40	2 33.3	33 20	1 28.4	64 0	0 28.4
7 25	7 1.4	12 25	4 18.7	20 50	2 32.0	33 40	1 27.3	65 0	0 27.2
7 30	6 57.1	12 30	4 17.0	21 0	2 30.7	34 0	1 26.2	66 0	0 25.9
7 35	6 53.0	12 35	4 15.3	21 10	2 29.4	34 20	1 25.1	67 0	0 24.7
7 40	6 48.9	12 40	4 13.6	21 20	2 28.1	34 40	1 24.1	68 0	0 23.6
7 45	6 44.9	12 45	4 12.0	21 30	2 26.9	35 0	1 23.1	69 0	0 22.4
7 50	6 41.0	12 50	4 10.4	21 40	2 25.7	35 20	1 22.0	70 0	0 21.2
7 55	6 37.1	12 55	4 8.8	21 50	2 24.5	35 40	1 21.0	71 0	0 20.1
8 0	6 33.3	13 0	4 7.2	22 0	2 23.3	36 0	1 20.1	72 0	0 18.9
8 5	6 29.6	13 5	4 5.6	22 10	2 22.1	36 20	1 19.1	73 0	0 17.8
8 10	6 25.9	13 10	4 4.1	22 20	2 20.9	36 40	1 18.2	74 0	0 16.7
8 15	6 22.3	13 15	4 2.6	22 30	2 19.8	37 0	1 17.2	75 0	0 15.6
8 20	6 18.8	13 20	4 1.0	22 40	2 18.7	37 20	1 16.3	76 0	0 14.5
8 25	6 15.3	13 25	3 59.6	22 50	2 17.5	37 40	1 15.4	77 0	0 13.5
8 30	6 11.9	13 30	3 58.1	23 0	2 16.4	38 0	1 14.5	78 0	0 12.4
8 35	6 8.5	13 35	3 56.6	23 10	2 15.4	38 20	1 13.6	79 0	0 11.3
8 40	6 5.2	13 40	3 55.2	23 20	2 14.3	38 40	1 12.7	80 0	0 10.3
8 45	6 2.0	13 45	3 53.7	23 30	2 13.3	39 0	1 11.9	81 0	0 9.2
8 50	5 58.8	13 50	3 52.3	23 40	2 12.2	39 20	1 11.0	82 0	0 8.2
8 55	5 55.7	13 55	3 50.9	23 50	2 11.2	39 40	1 10.2	83 0	0 7.2
9 0	5 52.6	14 0	3 49.5	24 0	2 10.2	40 0	1 9.4	84 0	0 6.1
9 5	5 49.6	14 10	3 46.8	24 10	2 9.2	40 20	1 8.6	85 0	0 5.1
9 10	5 46.6	14 20	3 44.2	24 20	2 8.2	40 40	1 7.8	86 0	0 4.1
9 15	5 43.6	14 30	3 41.6	24 30	2 7.2	41 0	1 7.0	87 0	0 3.1
9 20	5 40.7	14 40	3 39.0	24 40	2 6.2	41 20	1 6.2	88 0	0 2.0
9 25	5 37.9	14 50	3 36.5	24 50	2 5.3	41 40	1 5.4	89 0	0 1.0
9 30	5 35.1	15 0	3 34.1	25 0	2 4.4	42 0	1 4.7	90 0	0 0.0

TABLE XIV.— Horizontal Parallax of a Planet.

Alt. D.	35″	30″	28″	27″	26″	25″	24″	23″	22″	21″	20″	19″	18″	17″	16″	15″	14″	13″	12″	11″	10″	9″	8″	7″	6″	5″	4″	3″	2″	1″
0	35	30	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
10	35	30	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
20	33	28	26	25	24	23	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	8	7	6	5	4	3	2	1
30	30	26	24	23	23	22	21	20	19	18	17	16	16	15	14	13	12	11	10	10	9	8	7	6	5	4	3	3	2	1
35	29	25	23	22	21	20	20	19	18	17	16	16	15	14	13	12	11	11	10	9	8	7	7	6	5	4	3	2	2	1
40	27	23	21	21	20	19	18	18	17	16	15	15	14	13	12	11	11	10	9	8	8	7	6	5	5	4	3	2	2	1
43	26	22	20	20	19	18	18	17	16	15	15	14	13	12	12	11	10	10	9	8	7	7	6	5	4	4	3	2	1	1
46	24	21	19	19	18	17	17	16	15	15	14	13	13	12	11	10	10	9	8	8	7	6	6	5	4	3	3	2	1	1
49	23	20	18	18	17	16	16	15	14	14	13	12	12	11	10	10	9	9	8	7	7	6	5	5	4	3	3	2	1	1
52	22	18	17	17	16	15	15	14	14	13	12	12	11	10	10	9	9	8	7	7	6	6	5	4	4	3	2	2	1	1
55	20	17	16	15	15	14	14	13	13	12	11	11	10	10	9	9	8	7	7	6	6	5	5	4	3	3	2	2	1	1
58	19	16	15	14	14	13	13	12	12	11	11	10	10	9	8	8	7	7	6	6	5	5	4	4	3	3	2	2	1	1
61	17	15	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	2	1	1	0
64	15	13	12	12	11	11	11	10	10	9	9	8	8	7	7	7	6	6	5	5	4	4	4	3	3	2	2	1	1	0
67	14	12	11	11	10	10	9	9	9	8	8	7	7	7	6	6	5	5	5	4	4	4	3	3	2	2	2	1	1	0
70	12	10	10	9	9	9	8	8	8	7	7	7	6	6	5	5	5	4	4	4	3	3	3	2	2	2	1	1	1	0
72	11	9	9	8	8	8	7	7	7	6	6	6	6	5	5	5	4	4	4	3	3	3	2	2	2	2	1	1	1	0
74	10	8	8	7	7	7	7	6	6	6	6	5	5	5	4	4	4	4	3	3	3	2	2	2	2	1	1	1	1	0
76	8	7	7	7	6	6	6	6	5	5	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1	1	1	1	0	0
78	7	6	6	6	5	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	2	2	2	1	1	1	1	1	0	0
80	6	5	5	5	5	4	4	4	4	4	3	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	0	0
82	5	4	4	4	4	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0
84	4	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	0	0	0	0
86	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
88	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE XV. Dip of the Sea Horizon.

Height of the Eye. (Feet)	Dip of the Horizon. (′ ″)
1	0 59
2	1 23
3	1 42
4	1 58
5	2 11
6	2 24
7	2 36
8	2 46
9	2 56
10	3 06
11	3 15
12	3 24
13	3 32
14	3 40
15	3 48
16	3 55
17	4 02
18	4 09
19	4 16
20	4 23
21	4 29
22	4 36
23	4 42
24	4 48
25	4 54
26	5 00
27	5 06
28	5 11
29	5 17
30	5 22
35	5 48
40	6 12
45	6 36
50	6 56
55	7 16
60	7 35
65	7 54
70	8 12
75	8 29
80	8 46
85	9 02
90	9 18
95	9 33
100	9 48